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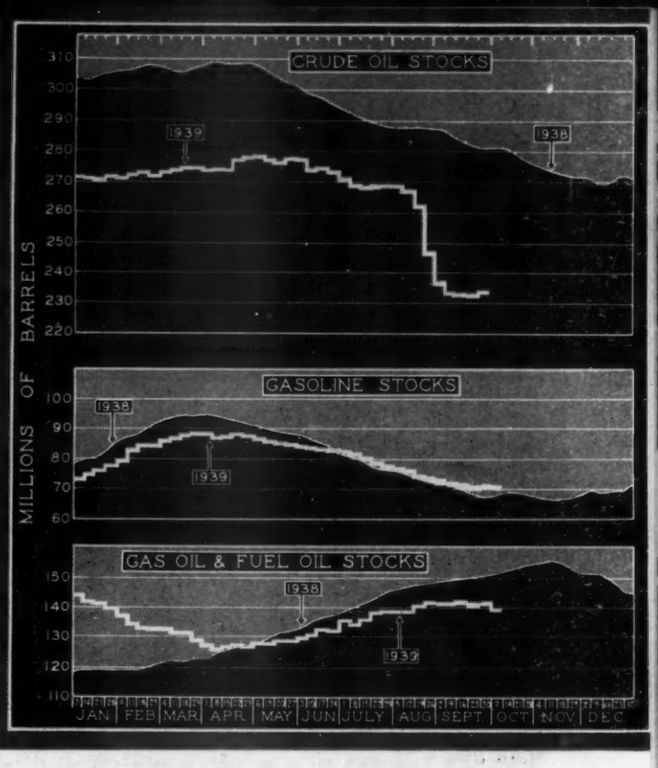
Trends

Strong Demand for Crude Sends Prices Up in Seven States



ADDITIONAL evidence of a strengthened crude-oil situation was given in the past week, when all companies purchasing in the Texas and Louisiana Gulf coastal area followed Humble Oil & Refining Co. in increasing crude prices, and fields in New York, Pennsylvania, Ohio, West Virginia, Illinois, Indiana and Michigan were given advanced prices. The Gulf Coast price increases affected the lower-gravity oils and pointed to strength in the fuel-oil situation, but a 25-cent price increase in eastern field, or Pennsylvania Grade, crudes, was proof of the firmness of the lubricating-oil market.

CRUDE PRODUCTION *3,426,039 bbl. daily average—down 221,365 bbl. One year ago 3,240,025 bbl.*

CRUDE STOCKS *233,023,000 bbl. as of September 30—up 212,000 bbl. One year ago 280,852,000 bbl.*

GASOLINE STOCKS *71,152,000 bbl. as of October 7—down 16,000 bbl. One year ago 69,129,000 bbl.*

GAS AND FUEL OIL STOCKS *139,698,000 bbl. as of October 7—down 1,432,000 bbl. One year ago 151,758,000 bbl.*

REFINERY RUNS *3,505,000 bbl. daily week ending October 7—down 55,000 bbl. One year ago 3,251,000 bbl.*

Weekly estimates of production in the Pennsylvania Grade fields show that while the purchasers have been offering to take more oil, producers have been unwilling to sell at the prices that were posted. When the need for the crude became so great that refiners expressed a willingness to take 100 per cent of the oil for which they had contracted, it was also found necessary to raise the price 25 cents per barrel to induce operators to part with their production.

Practically all the fields in Michigan have been accorded price increases in recent weeks ranging from 2 cents up to 8 cents per barrel, and on Monday the Michigan Oil Advisory Board decided against modification of proration rules and allowable production. Notwithstanding Illinois and Indiana's increasing crude production, small price increases, ranging from 5 to 10 cents, have occurred in some fields in those states. East Texas crude has been placed on a $1.10 flat-price basis by all purchasers there, which is more satisfactory to producers, and scattered Southwest Texas pools have benefited from recent price changes.

Firmness marked most divisions of the refinery market, although export shipments are deranged by war conditions, and this in turn has created confusion in tank-car movements. Tightness prevailed in lubricating oils and wax, with prices pointing higher. Natural gasoline maintained its strength, but irregularity in boat schedules was preventing smooth flow of material from plants to Gulf ports. Gasoline, largely as a result of disturbed overseas shipping service and uncertainties concerning possible developments in the European war, lacked vigor. Contributing also to the negative character of the gasoline market were the seasonal decline in demand and excessive runs to stills in some areas, with consequent unwieldy stocks. Rain in various regions where drouth had prevailed is permitting long-delayed fall plowing to begin, thus stimulating the call for tractor fuels. Heating oils have been laggard, owing to prolonged warm weather.

DAILY AVERAGE PRODUCTION FOR WEEK

	Oct. 7, 1939	Bur. Mines Oct. est. of demand	Oct. state allowables	Sept. 30, 1939
Oklahoma City	91,750	.....	.....	75,725
Seminole fields	37,075	.....	.....	37,650
Remainder of state	273,600	.....	.....	274,150
Total Oklahoma	402,425	424,200	424,200	387,525
East Texas	394,590	.....	.....	491,798
West Texas	211,846	.....	.....	247,846
North Central Texas	97,110	.....	.....	116,700
Texas Panhandle	77,392	.....	.....	68,347
East Central Texas	86,088	.....	.....	92,799
Gulf Coast Texas	311,914	.....	.....	368,000
Southwest Texas	76,943	.....	.....	99,600
Total Texas	1,255,883	1,444,800	1,360,563	1,485,090
North Louisiana	65,974	.....	.....	66,175
Gulf Coast Louisiana	187,100	.....	.....	180,900
Total Louisiana	253,074	260,300	258,404	247,075
California	611,000	594,800	598,300	610,750
Kansas	144,075	170,600	170,600	157,225
Arkansas	66,015	56,100	65,300	65,870
Eastern fields	99,250	99,400	.....	98,500
Illinois	332,715	275,500	.....	344,267
Michigan	67,982	61,000	.....	68,362
New Mexico	111,450	114,200	114,200	99,850
Rocky Mountain area	82,170	89,400	.....	82,890
Total United States	3,426,039	3,590,300	.....	3,647,404

SPARKS . . . FROM THE NEWS

PRICING: The matter of retail marketing continues to interest the T.N.E.C. at the hearing. How retail prices are determined will probably come in for a lion's share of the remainder of the investigation.

SENSATIONAL: Picturesque words and strong language punctuated one witness' evidence as the second week of the T.N.E.C. hearing got under way. The reproach he received is eloquent evidence that the hearing is no place to air a grudge or to grind one's axe.

DILEMMA: We wonder if Mr. Hitler's peace overtures might have anything to do with a sudden realization that a motorized war machine must have gasoline, and that Germany's oil resources are hopelessly inadequate for his army's Gargantuan needs.

INDIVIDUALITY: West Texas operators have speeded up their well-cleanout operations in many fields in order that each well be sure to make its allowable daily. A recent order of the Railroad Commission eliminates the practice of measuring the combined production of a group of wells and then dividing this by the number of wells.

NO LETUP: Thus far the contestants in the octane race have paid no attention to the various red flags which have been raised and the judges seem to be a long way from using the checkered flag.

OPTIMISM PLUS: Refiners throughout the United States have been maintaining high schedules in anticipation of increased world consumption of oil due to the war. Thus far they have prepared for something that hasn't happened.

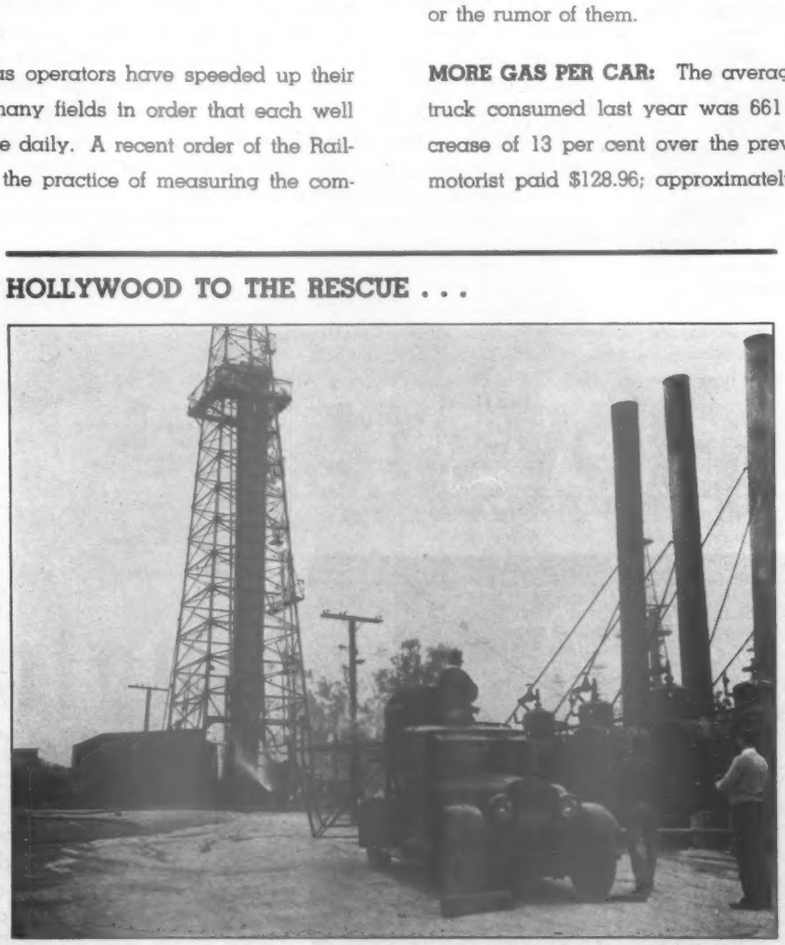
RECYCLING: Increasing discoveries of high-pressure gas-condensate reserves have turned the attention of the industry's technologists upon improved methods of condensate extraction and recycling. Still in its early stages, the development gives promise of rapid expansion.

TEXANS SING: The favorite ballad in recreational spots in the Illinois area, when oil men gather to drown their cares in song, has become "The Eyes of Texas." Three guesses where the balladeers hail from.

FORESIGHT: There's a rumor going the rounds that supply companies in the Illinois-Indiana area are laying in a stock of steel boats in anticipation of the floods that annually visit the area. Oil wells will have to be tended, flood or no, and thus the boats, or the rumor of them.

MORE GAS PER CAR: The average quantity of gas per car or truck consumed last year was 661 gal. This represents an increase of 13 per cent over the previous year. For this fuel the motorist paid $128.96; approximately 30 per cent was tax.

HOLLYWOOD TO THE RESCUE . . .



In the Montebello field, when a well recently got out of control, spouting thousands of cubic feet of highly inflammable gas in the air, operators called on movie producers for a wind machine such as used for storm scenes, to blow back the escaping gas from the hot boilers to prevent an explosion. The workmen then donned gas masks and after 2-day battle capped the well

COMPLAINT: Jobbers are complaining because of low tank-wagon prices for gasoline, but the fate of last summer's attempt to raise them is still fresh in memory.

ANNIVERSARY: Oklahoma and Kansas crude prices have now completed a year without a change. It wasn't because producers didn't want one.

BIGGER AND BETTER: A broad program of filling-station improvement has been inaugurated throughout the Southwest which seems to be leading to fewer but larger stations.

Oil Needs and Supplies of the Warring Nations

Wide World photo

Eight German merchantmen shown at anchor in Curacao, Netherland West Indies. Altogether 16 German ships are tied up in the Netherland West Indies

By L. DAVID WOSK

FOR a long time, it has been axiomatic that an army moves on its stomach, meaning, of course, that armies are dependent upon food supply; mobility depends upon man-power kept functioning by food. In modern warfare, the degree of mechanization—hence mobility—has increased to the point where it safely may be said that an army moves on wheels and is dependent of its supply of oil.

Prior to the Polish conquest, some military experts were still in doubt as to the part mechanized forces (requiring a huge supply of petroleum products) will play. The majority now agree, however, that mechanization is the greatest factor. The lightning conquest of Ethiopia by the Italians; the war of the Chaco; the rapid advance of Japan into China; the ultimate victory of Franco in Spain, assisted by mechanized forces from without, and the more recent lightning conquest of Poland by Germany's superior mechanized force can leave but little doubt relative to this. Without petroleum products, the greatest mechanized army in the world would become immobile, and thereby become an easy prey to a smaller or inferiorly mechanized but adequately supplied army. A mobile army is more important than a nonmobile, mass army. Petroleum derivatives are, therefore, the prime requisites of modern warfare.

During the last war, the role of petroleum products was not clearly seen until after the victory by the Allies. The Battle of the Marne in 1914 was decisively settled by General Gallieni, who mobilized the famous taxi parade from the Paris garrison to the front. Lord Curzon announced, in 1918, that oil was the decisive factor in the Allied victory, as did Winston Churchill and the French Senator Berenguer.

Effect on Petroleum Economy

While the importance of oil in the present war is clear, the salient factors, such as wartime demands versus peacetime demands, possible source of supply, domestic storage and its protection under new conditions, substitute fuels, new refining burdens and new transportation problems, must be considered if a realistic picture is to be seen. Obviously, the entire nicely balanced world petroleum economy will be upset. This will affect the United States more than any other nation. It is a problem affecting the life and living standards of every citizen—not just those directly connected with the petroleum industry.

The author, during the past several months, has been in Europe, conducting a survey of the above factors and will discuss each in detail. He has interviewed leading petroleum and military figures and draws upon foreign language material heretofore not generally available in the United States.

Although war has commenced and the outlines of the new alignments in this war are becoming clear, the author will refrain from discussing specific alignments as far as possible other than those now known. The interplay of national interests of allies or potential allies makes hard and fast groupings impossible at the present time. He is aware of the interplay of treaties and diplomacy, and is also aware of the rapidly changing circumstances which cause abrogation of these treaties to meet national needs. Certain inevitable conditions will result from the present known alignments and these will be treated. Hypothetical conditions will be avoided as much as possible.

Before a thorough discussion of this subject can be entered into, the requirements of nations at war must be estimated. General Serrigny, prominent in petroleum circles and war councils in France, after a thorough study, recently said: "The future war will be based on mechanical engines and, both on the battlefield and in the rear, the petrol necessary for the engines will play a preponderant role." Thus, whether the army with its thousands of tanks, trucks, motorized troops and motorized artillery, or the navy or aviation is concerned, it is the

---

The author, who is a widely known oil geologist and engineer, arrived in Europe in May. Becoming convinced that a European war would be under way before the end of the year, he began an investigation as to the position of the major powers with regard to oil supplies and demand, once hostilities started.

He contacted personally many officials who had first-hand information as to the oil needs of their countries. His investigation included the translation and analysis of original reports having a direct bearing on the oil situation.

The conclusions of this investigation, exclusive to The Oil and Gas Journal, are published in this issue and in a second article which will appear in the October 19 issue. The demand data which differ from recent projections made in this country assume that the war will shortly be under way on an unrestricted basis both on land and sea.

Mr. Wosk is a graduate of the Colorado School of Mines, (1924) where he received his degree as Petroleum Engineer. His early experiences in the oil industry were with Marland Oil Co., Shell Oil Co., Inc., and White Eagle Oil & Refining Co., which companies he served in geological and engineering capacities. He also served 1 year with the U. S. Bureau of Mines.

In 1930, Mr. Wosk became an independent consulting engineer and geologist, with headquarters in California. As such, he worked for some time in the oil fields of Mexico.

His extensive travels have taken him to China, Japan and many European countries. In 1937 he covered the International Geological Congress in Moscow, U.S.S.R.

He returned to this country September 16, after 5 months' stay in several European countries.

same motorized war which must be dealt with, with its activity directly bound up with the oil resources of the belligerent parties. To deprive a modern army of its fuel is to insure its incapacity to function properly and possibly to spell its defeat. In the Ethiopian war, for instance, it is known that it would have been sufficient to close the Suez Canal to the oil tankers bringing oil from the Mediterranean to the Italian armies to compromise and extend the whole campaign.

At first sight, one might think that fuel requirements in wartime would not be very different from those in peacetime. In the event of war, most of the vehicles for the army would be raised by requisition, as is the case in Europe today, so that the total number of vehicles in use in the army and in the rear would remain practically unchanged. The same applies to civil marine and aviation units in varying degrees. However, the vehicles used for army purposes generally travel in convoy formation and consume about double the amount of fuel consumed by a car for civilian purposes over the same distance. This is based on experiences of the World War. Also, the activity of all transport during wartime is intensified, again increasing the fuel requirements. Recent military maneuvers and numerous mobilizations have given military men some idea of the increased consumption under military conditions. Even military men were surprised at the quantity of fuel consumed during such maneuvers.

A single motorized division used over 3,000 hl. during each 24 hours. The war requirements cannot be based on figures provided by mobilization alone. Extensive developments of motorization increase during wartime. For example, in August 1914, 8,000 automobiles were requisitioned in France, whereas in November 1918, the army and 100,000 at its service. The same ratio will apply in aviation and other branches. A minimum of 1,000 per cent increase in aviation during wartime over peacetime is estimated. In the case of naval operations, while the total number of ships involved increases very slightly, the activities, due to the necessity of extensive patrols and convoys, increases the demand materially. The above elements give only a slight conception of the reasons for increased war demands.

While the above-mentioned General Serrigny has anticipated that the requirements of all of the belligerents of Europe will reach 70,000,000 tons annually, a ratio of 2.5:1 (war needs versus peacetime needs), A. de Boulard of France, one of the outstanding petroleum engineers of Europe and also very active in military circles, has estimated that 100,000,000 tons would be a conservative figure (over 3:1). Ferdinand Freidensburg, one of the best German authorities, basing his estimates on World War experiences (requirements per kilometer of fighting front and hinterland activities), estimates that Germany's requirements will be a minimum of 20,000,000 tons or a ratio of 3:1 to peacetime needs. (Deutsche Volkswirt, April 16, 1937.) Other German authorities estimate up to 40,000,000 tons for Germany, or a ratio of approximately 6:1.

In estimating the wartime requirements and bearing in mind the variations in the estimates of various experts (from 2.5:1 to 6:1—wartime versus peacetime needs), the author feels that a very conservative estimate of 3:1 can be safely assumed. This has been arrived at after discussions with experts of Europe as well as a thorough examination of available literature on the subject.

Using the ratio of 3:1, the requirements of the present belligerent nations would be (based on 1938 consumption): Germany, 21,000,000 tons (prior to acquisition of Poland though after Austria and Czechoslovakia). England, 36,000,000 tons, France 21,000,000 tons (combined 57,000,000 tons).

Generally speaking, whichever of the above ratios is accepted, one thing is certain, that the wartime needs of Europe are out of all proportion to its own resources. The Soviet Union alone might be able to supply its needs from its own fields through an intensified development of its proved, undeveloped reserves, induced by wartime conditions, in the opinion of the author, Russia would be unable to export appreciable quantities to either an ally or an open market. The U.S.S.R. is not likely to undertake such artificial stimulation, unless compelled to do so through its own active participation in a war in which its own national interests are directly involved.

TABLE 1—(Figures are in tons)

Country—	Production	Consumption	Exportable surplus	Actual exports	Deficit to be met by import or synthetic fuels
U.S.S.R.	29,500,000	22,167,852	7,332,148	930,500	.....
Rumania	6,870,000	1,674,046	5,195,954	4,500,000	.....
Albania	120,000	58,200	61,800	61,800	.....
Germany	628,000	7,125,929	.....	.....	6,547,929
Poland	507,000	443,468	63,532	63,532	.....
Great Britain	1,000	11,945,701	.....	.....	11,944,701
France	80,000	6,993,772	.....	.....	6,913,772
Italy	13,000	2,834,690	.....	.....	2,821,690
Hungary	40,000	258,371	.....	.....	218,371
Holland	.....	1,441,175	.....	.....	1,441,175
Sweden	.....	1,181,136	.....	.....	1,181,136
Belgium	.....	688,000	.....	.....	688,000
Denmark	.....	856,956	.....	.....	856,956
Norway	.....	646,463	.....	.....	646,463
Spain	.....	510,052	.....	.....	510,052
Switzerland	.....	448,877	.....	.....	448,877
Greece	.....	338,173	.....	.....	338,173
Eire	.....	297,153	.....	.....	297,153
Finland	.....	248,108	.....	.....	248,108
Portugal	.....	197,587	.....	.....	197,587
Turkey	.....	175,567	.....	.....	175,567
Yugoslavia	.....	127,673	.....	.....	127,673
Bulgaria	.....	104,614	.....	.....	104,614
Latvia	.....	53,558	.....	.....	53,558
Malta	.....	48,617	.....	.....	48,617
Esthonia	.....	45,678	.....	.....	45,678
Lithuania	.....	41,735	.....	.....	41,735
Iceland	.....	25,798	.....	.....	25,798
Total	37,759,000	60,978,949	12,653,434	5,555,832	35,923,387

Photo by Henri Manuel

Right: L. Peneau, director of liquid fuels and minister of public works, of France. Also, director of operations on Pineau well, seen in the photograph below. This well is at St. Marcet

Knowing something of the wartime requirements of Europe, the general question arises of meeting those requirements. What is the normal peacetime production and consumption of the European nations and what are the deficiencies? Table 1 shows the production of crude oil and consumption of petroleum products of each nation of Europe, together with the exportable surplus and actual exports, all for 1938, all figures being in tons.

The production of crude oil is not the only source of combustible fuels, as synthetic products must also be considered. For the purpose of this study, neither raw coal nor wood will be considered as combustible fuels. This will be treated later, however.

No Power Self-Sufficient

It can be seen from a study of the figures that with the exception of the U.S.S.R. and Rumania, no important power of Europe is self-sufficient in natural-petroleum products. Albania's surplus is insignificant. It is possible, however, for the European nations, as enumerated in Table 1, to expand their production under wartime stress sufficiently to overcome their deficiency to an appreciable extent? This question must be considered from two angles, (1) that of expansion of crude production and (2) expansion of synthetic products or substitute fuels. Let us consider each separately.

Every nation of Europe has recognized its dependence on oil and has attempted to supplement its own production by every means possible. The most successful results have been achieved in Ger-

many and the Soviet Union. Both of these nations are dominated by the policy of internal self-sufficiency, even though this calls for production of petroleum products at a price exceeding that in the world market. Both nations have attempted to free themselves from dependence upon the outside world.

Sources of Mineral Oil

Germany's sources of mineral oil are three in number, (1) the German fields, (2) the Austrian field of Zisterdorf and (3) the two Slovakian fields of Gbely and Hodonin. Intensive drilling operations undertaken since 1934 have increased the output of Germany. The area explored by geophysical means increased from 8,000 sq. km. in 1934-35 to 90,000 sq. km. in 1938-39. During the period 1924-38, 270 wells were drilled, of which 35 proved productive. The production during the past 6 years is about equal to the total production from 1872 to 1932. The production during the past 6 years is noted in Table 2.

As can be seen from Table 2, the oil field of Nienhagen and the new wells opened since 1933 have furnished the major part of the output. Experience demonstrates that unless this production is supplemented with new discoveries rapid decline will set in and the present fields now being at their peak, decline is indicated.

The Austrian field of Zisterdorf, near Vienna, was opened in 1932, with an initial output of 72 tons per year. In 1938, it produced nearly 60,000 tons and its production is still rising.

The two adjoining Slovakian fields produce a total of 20,000 tons per year. Therefore, the total production of native oil of Greater Germany for the year 1938 equaled 628,654 tons, distributed as follows:

	Tons
Old Germany	552,074
Austria	56,580
Slovakia	20,000
Total	628,654

It must be mentioned at this point, however, that with the conquest of Czechoslovakia, Germany gained a whole zone of potentially productive structures extending along the entire Polish-

New York Times

Acme photo

Following the suggestion of Counselor G. Duttweiler, of Zurich, Swiss authorities are experimenting with a system of submersible tanks, containing oil or gasoline, which can be anchored beneath the surface of the water of Swiss lakes in time of war. The photograph above shows one of these tanks on Lake de Thun. Seen at the right are the pipes which feed the gasoline into the tank before immersion

At the left are seen a pair of Dornier DO 25 bombing planes in flight. They represent Germany's latest war planes, and are now being put into production. The plane is a twin-engined all-metal bomber capable of a speed of better than 330 miles an hour and a load of about 7,000 lb.

TABLE 2—(Figures are in tons)

Year—	Nienhagen field	Wietze field	Oberg field	Other fields	Total
1933	174,979	53,804	32,906	5,814	237,503
1934	240,733	51,874	20,245	1,750	314,602
1935	331,211	50,265	27,879	20,323	429,678
1936	333,266	46,835	23,125	41,416	444,642
1937	346,811	44,769	21,410	40,461	453,451
1938	358,190	43,448	16,903	133,533	552,074
Total	1,784,690	290,995	142,468	234,297	2,431,950

Slovakian frontier. This area may prove valuable, though it is unlikely that the resources and personnel can be spared for their exploration and exploitation during wartime.

In addition to the noted total, part of the production of Poland must be added, although the exact quantity cannot be determined at present. To offset this, however, it must be kept in mind that most of Poland's consumption came to Germany also. The eastern part of Poland, now Russian, was a small consumer of petroleum products compared to the western section, now German. It is important to consider other Polish factors also. Poland's production in 1932 was 556,680 tons, rising to 614,760 tons in 1935 and falling to 507,000 tons in 1938. Part of this precipitate decline can be attributed to the disturbed political condition of the nation, but the chief factor is the natural decline of the fields. This decline will undoubtedly continue, and, unless new major fields are opened in German-Poland, unlikely during wartime, Germany's gain of petroleum resources may prove to be a deficit, as did the acquisition of both Austria and Slovakia.

U.S.S.R.

The attempts of the Soviet Union to improve and extend its petroleum industry are well known and have, from time to time, been discussed by the author, who visited all major petroleum centers of the Soviet Union in 1937. The chief attempt in the Soviet Union's petroleum industry in recent years has been that of developing the Volga-Emba-Ural district. The object has been to establish in this highly impregnable area an oil base comparable to that of Baku. In recent years, this attempt has met with marked success, many new fields having been opened, pipe lines and refineries constructed and huge areas blocked out for prospecting and development. Active development commenced approximately 1932, but only since 1935 has this area shown its possibilities. It was hoped by Soviet officials that this area would produce between 7,000,000 and 8,000,000 tons annually by 1942. This figure undoubtedly will not be reached because of the dislocation of all industry at the present time. Ten to twelve refineries were to be built in this area by the end of 1942.

Production from the western Ural slopes and the Volga was only 34,000 tons in 1933 whereas in 1938 it had reached 1,500,000 tons. The oil is of excellent quality, easily treated and suitable for gasoline production. The 1939 production from this area should be approximately 2,000,000 tons. In the Ishimbaevo area, there are 200 producing wells and production has increased from 406,000 tons to 1,444,000 tons annually in the period 1935 to 1938. The March 1939 daily production was 4,700 tons and rapidly increasing. The estimated reserves from this area within easy reach of the drill are approximately 150,000,000 tons as of 1939. At Tuimaza, a 1937 discovery, over 20,000 acres have been proved and in the entire Ural-Volga area, over 100,000 acres proved but undeveloped exist. Ten thousand wells can be drilled in this proved area allowing for 10-acre spacing. While the production of the Emba district has risen very slowly, that of the Ural-Volga district rose from 600 tons in 1929 to the 1,499,000-ton figure in 1939. In addition to the developments in the Volga-Ural area, new fields are being opened and old ones extended in the region of Baku. The industry is being integrated through an extension of the pipe-line system, canal transport, sea transport and also, the construction of a wide network of refineries. The production in the Soviet

Union from 1932 to 1938 inclusive has been as follows (in metric tons):

TABLE 3

Year—	Production	Exports
1932	21,389,300	6,106,000
1933	21,330,100	4,890,000
1934	24,092,700	4,310,000
1935	25,241,100	3,353,000
1936	27,384,900	2,660,000
1937	27,867,025	1,930,000
1938	28,859,000	930,500

From the above table it can be seen that the Soviet Union's production is steadily climbing while her export is rapidly declining and in 1938 practically vanished. It may be said, therefore, that while the Soviet Union has in excess of 100 per cent of her own requirements in peacetime, this excess would vanish in time of war. The Soviet Union also has acquired part of Poland's production and consumption. The same factors affecting German-Poland also apply to Russian-Poland. The net effect cannot yet be determined. It is interesting to note (refer to Table 1) that while the Soviet Union's exportable surplus in 1938 was 7,332,148 tons, her actual exports were only 930,500 tons. This would indicate storage of petroleum products. While it may be reasoned that the Soviet Union could export this surplus to a military ally, the transportation problem by land or sea during wartime makes this very difficult. Insufficient tank cars and difference in rail gage makes land transport to any ally difficult, if not impossible. Shipments by sea are dependent upon free access to the Mediterranean and the attitude of Rumania, insofar as the mouth of the Danube is in Rumania territory. If one considers the Soviet's internal industrial demands, her desire to conserve her petroleum for her own possible military requirements, and the inability of Germany to pay for the large quantities of oil required in the present war, the author feels that Soviet supplies to Germany will be negligible.

Rumania

The most important exporter of petroleum products in Europe is Rumania. While the domestic consumption of Rumania has risen slightly, the production has declined rapidly, thereby decreasing the quantity available for export. This is shown in the following table (in tons):

TABLE 4

Year—	Total crude and refined production	Exports	Domestic consumption
1929	4,877,000	2,847,000	1,324,000
1930	5,834,000	3,867,000	1,253,000
1931	6,781,000	4,668,000	1,181,000
1932	7,501,000	5,167,000	1,229,000
1933	7,556,000	5,884,000	1,333,000
1934	8,665,000	6,547,000	1,411,000
1935	8,614,000	6,611,000	1,480,000
1936	8,986,000	6,885,000	1,546,000
1937	7,457,000	5,668,000	1,621,000
1938	6,872,000	4,500,000	1,674,000

Repeated attempts to offset the decline of production have been made but to no avail. This decline continues through 1939, production being 4.5 per cent lower in the first quarter compared with 1938. It is possible, however, that if cost of production were a secondary factor, Rumania's production might be increased. Should Rumanian fields fall in the hands of an oil-hungry nation, such as Germany, this would be the case. The extent of increase cannot be predetermined but it would not be great. It should be borne in mind, however, that if these fields were taken in a war, they undoubtedly would be destroyed before being abandoned and the rehabilitation could come only at tremendous cost and would take 2 to 3 years.

At the present time, the flow of Rumanian oil to the various nations of Europe is of special importance. Generally speaking, this oil is exported toward the Mediterranean and Danubian basins. The Mediterranean traffic is the most important. In 1913, it represented 45 per cent of the total exports, rising to 50 per cent in 1926 and falling to 40.6 per cent in 1938. In 1931, the nations of the Danubian Basin (Austria, Czechoslovakia, Yugoslovia and Bulgaria) took approximately 15 per cent of Rumania's exports, whereas in 1938, the percentage fell to 11.7 per cent. The following table traces Rumanian exports to each nation for the years 1937 and 1938 (in tons):

TABLE 5

Nation—	1937	Per cent of total	1938	Per cent of total
Germany	435,281	7.68	693,264	15.42
Italy	575,800	10.16	556,535	12.38
Great Britain	580,182	10.24	540,431	12.02
Czechoslovakia	354,131	6.25	294,898	6.56
France	603,868	10.65	289,338	6.44
Egypt	278,884	4.92	283,305	6.30
Greece	249,244	4.40	200,215	4.46
Hungary	288,411	5.09	198,076	4.41
Yugoslavia	164,658	2.90	143,156	3.19
Spain	229,351	4.05	142,853	3.18
Belgium	52,863	0.93	120,089	2.67
Switzerland	103,083	1.82	88,873	1.98
Syria and Libya	98,574	1.74	79,770	1.77
Bulgaria	93,046	1.64	79,768	1.77
Tunisia	62,616	1.11	76,582	1.70
Palestine	29,617	0.52	66,136	1.47

Because of the acquisition of Czechoslovakia by Germany, these figures should now be combined.

Hungary

An important area of Europe, from the standpoint of both intensive exploration and exploitation prior to the outbreak of the war, lies in Hungary and Yugoslavia. Oil was first discovered in Hungary in 1936, the total production for that year being 13 tons. This rose rapidly to 40,000 tons in 1938. Production comes from five wells and the area of production, while small, could be extended with systematic development. Other potential structures are known. Recently, capital of German origin completed an agreement for the exploration and exploitation of 2,950 sq. kms. in an area of Yugoslavia, favorably considered. Just how the war will affect this development is unknown but if development is stimulated, it may mean additional production for Germany. It is unlikely that this will be an important factor, however.

In the remaining nations of Europe, many attempts have been made to discover and develop oil. To date, little progress has been made. Recent discoveries in Great Britain, while encouraging, do not give promise of extensive production. The recent discovery of natural gas in France is probably the outstanding development of the year. For many years, Prof. Leon Bertrand has believed that oil would be found in the area of Pinat on the line of folding adjacent to the low Pyrenees. This is more accurately described as the Haute-Garonne district. Drilling was commenced in January 1939, under the direction of M. Jean de Vries. and at a depth of 1,520 m., natural petroleum gas (183,000 cu. m.) was discovered in July 1939. The importance of this discovery lies in the fact that there are several large, well-defined structures on the north flank of the Pyrenees with equal possibilities and also, that this well is located on the crest of the anticline, the flanks of which should produce when drilled. Extensive development was being undertaken just prior to the outbreak of the war and undoubtedly these efforts will be stimulated by France's need for oil.

Thus, it can be seen that the principal nations of Europe, with the exception of the U.S.S.R. and Rumania, are dependent on sources other than their own crude-oil production, if their requirements of combustible fuels are to be met. Furthermore, the possibilities of extending the crude-oil production are extremely limited in every nation in Europe, with the exception of the U.S.S.R. Many European nations are supplementing their crude-oil supplies through the manufacture of synthetic products from lignite and brown coal, peat, wood, beets, potatoes and other vegetable materials.

In the second and concluding installment of this article, which will be published next week, Mr. Wosk discusses the matter of synthetic fuels and the extent of their production in Europe. He also reveals how the belligerents are preparing to protect their refineries and storage facilities from attacks by air and how they are proposing to supplement their own resources by importation from outside and the probable sources of these importations. It is his opinion that wartime demands will be thrice those of peacetime and that the excess demand will fall upon the exporting nations of the Americas.

ILLINOIS BASIN ISSUE . . . published October 26

● The third annual Illinois Basin Number of The Oil and Gas Journal will be published October 26. The issue will present a thorough survey of operations in all divisions of the industry in this area, which includes the 72 fields of Central and southern Illinois, parts of Indiana and western Kentucky. The editorial coverage will embrace numerous articles on geology, production, drilling, pipe lines and refining. In addition, copies sent to mail subscribers will contain a

THREE-COLOR OIL MAP OF THE ILLINOIS BASIN

● This map is the most complete ever published on the area. It shows locations of all fields, pipe-line systems, refineries, and natural-gasoline and repressuring plants.

● You'll not want to miss this important contribution to the literature of the nation's most active oil area. This issue alone is worth the price of a year's subscription. Send in your subscription order *now*, to make sure of your copy of this important number. Mail your check or money order for $6.00 to The Oil and Gas Journal, Tulsa, Oklahoma.

Government Witnesses Called for T.N.E.C.

By HENRY D. RALPH

WASHINGTON, D. C., Oct. 10.—The prospect of government testimony in the oil hearing by spokesmen from executive departments appears as a possibility. Informed quarters heard late Monday that witnesses unscheduled would appear in behalf, possibly, of the Department of Labor, Federal Trade Commission, Interior Department, and Department of Justice.

Other unconfirmed reports were that additional witnesses would include a spokesman for the governor of Wyoming where the price of gasoline is a political subject. Another witness reported slated is a Texas state senator, Mr. Hill, said to be a foe of proration. Department of Justice testimony, it was reported, will concern questionnaire returns filed with the committee. Isador Lubin, chief, Bureau of Labor Statistics, Department of Labor, it was reported, also would testify.

Committee counsel are weeding out witnesses to those who can present authenticated material concerning matters not covered to date. The committee had hoped to conclude by October 14, but this appears unlikely now.

Divorcement of marketing activities to assure existence of independent jobbers was urged Monday by P. E. Hadlick, secretary, National Oil Marketers Association. When Clarence Avildson of the Department of Commerce sought to challenge the Hadlick data, describing it as "ancient history" at one point, the witness was supported by counsel for the committee, Hugh Cox, and Quinn Shaughnessy, of the Securities and Exchange Commission. Mr. Cox said the questionnaires sent to the companies were designed to develop the facts involved in marketing but they did not succeed.

The Securities and Exchange Commission officially observed that the financial statements do not break down income among the four departments. He added: "We have found that companies do not gratuitously give financial information."

Mr. Cox told the committee information as to losses in marketing was of no use since the companies replied that (1) they did not know what their marketing costs were or (2) that such data as was available would be meaningless, even if furnished.

The committee questioning took the witness into Interstate Commerce Commission regulation of pipe lines which led to the witness expressing no confidence in I.C.C. regulation, and an opinion that major oil companies virtually dictate railroad rates on gasoline through threatening to build "mythical pipe lines."

On so-called inducements such as paving, painting, loan of equipment, building construction, etc., rendered retailers the committee appeared to be in fairly general agreement that these practices are the result of uneconomic competition and constitute unfair trade practices even though not within the ban of statutes.

Mr. Hadlick denounced proration as a price-control device. Prorated flowage and shrinking margins would have wiped out the independent jobber, he said, had it not been for the flush production in Michigan and Illinois. Confidence was expressed by Mr. Hadlick that the Illinois Legislature will enact a proration law later this month.

Senator O'Mahoney concluded that the witness had demonstrated the existence of uniformity in jobbers' margin throughout the country, with but slight exceptions, and inquired whether, if that was so, it could be possible to obtain a standard consumer's price for gasoline throughout the country. Mr. Hadlick said this could not be accomplished due to various factors.

"What's the minimum margin upon which a jobber can operate?" Chairman O'Mahoney asked. The witness replied that two factors determine that: (1) natural terrain and (2) competition; what would be sufficient in one area would be too low in another. He said from 2 to 2½ cents would suffice in small metropolitan districts the size of Richmond or Norfolk, Va.; more would be required in Chicago where operating expenses are higher due to strict union rules; 3 cents in the Rocky Mountain area; 2½ cents in Standard of Ohio territory; 2 cents in Standard of Indiana territory. "Roughly it lies somewhere between 2 and 3 cents. Trouble begins around 2 cents," he said.

Majors Have Advantage

Commissioner Henderson concluded that the concessions granted dealers by major companies, "bait," he termed it, enabled big companies to take outlets away from independent jobbers.

Recapitulating, Chairman O'Mahoney reduced Mr. Hadlick's case to these words:

"What you say amounts to and is a definite conclusion that in the oil industry, as in other industries the integrated companies tend to drive nonintegrated companies out of business. The problem for the committee to decide is whether to maintain the nonintegrated companies or permit the integrated companies to grow and absorb independent enterprise."

Typical of interchanges is the following:

Chairman O'Mahoney: "Is it your conclusion that integrated companies should be eliminated?"

Mr. Hadlick: "Not eliminated; break them up into different phases; refiners should not engage in marketing. Divorcement of marketing would accomplish the purpose and not make much difference whether pipe lines are divorced or not."

Assuming that, as the witness contended, "an increasingly larger proportion of independent jobbers are coming under the control of the integrated companies," Senator O'Mahoney asked:

"Is it your conclusion that if your suggestion is carried out the consumers would not be penalized?"

Answer: "Yes. The rules of the game would be somewhere near fair."

Mr. Avildson, Commerce Department: "If you

SELECTED SENTENCES FROM WITNESSES' TESTIMONY

Robert E. Wilson, Pan American Petroleum & Transport Co.: "Oil refining as a whole is a particularly apt illustration of the fact that our American system is not a profit system but a 'hope-for-profit' system which would not have attracted much of the required capital had there been a full appreciation of the hazards involved and the low average earnings actually to be realized over a period of years."

Sidney A. Swensrud, Standard Oil Co. of Ohio: "The characteristics of the gasoline market embrace the widest dispersion of retail outlets of any industry; the marketing of a product consumed to a great extent by the low-income group of the population; an average service-station sale of less than 5 gal., and a commodity toward which customers have a brand preference which does not carry over to the point of paying price differentials on identical house-branded gasolines."

Charles L. Suhr, Pennzoil Co.: "The sponsors of this investigation are not asking for subsidies, special privileges or protection from any form of legitimate competition. All they ask is for a free and open market for their products."

Fayette B. Dow: "Lacking a variety of traffic, as well as a variety of shippers and receivers of freight, the pipe line does not perform the functions usually associated with common carriage."

Ernest O. Thompson: "We aren't asking for any further help from the Government. We are not supplicants here. All we want is to be left alone. The need for the Connally Act has passed although it did help prevent the shipment of hot oil from Texas."

P. A. Hadlick, National Association of Oil Marketers: "I will attempt to show you that the major oil companies have made profits in their overall operations and yet lost money in marketing."

E. L. Orvis, rate lawyer, Jersey City: "Genius and cupidity in varying degrees are disclosed in every analysis and study of the business. And according to most biographers, the cunnings of cupidity have prevailed in the field of transportation."

Chairman O'Mahoney: "We must acknowledge that the element of price has entered into the administration of proration—at some times and at some prices."

Acme photo

Robert E. Wilson, president, Pan American Petroleum Corp., testifying before the monopoly committee

follow that through you will find it will hurt a lot of other people."

Mr. Hadlick: "If it keeps on another 5 years there won't be 200 independent jobbers left in the country."

A double surprise featured the second week when a witness accused major oil companies and railroads of conspiring to violate the antitrust and transportation acts, and when the committee refused to hear this testimony until the authenticity of the evidence could be fully established.

The witness, Eugene L. Orvis, traffic attorney of Jersey City, N. J., was the first witness so far to make specific charges of illegal acts on the part of any oil company. An equal sensation was caused when Chairman O'Mahoney refused to let the witness continue until his evidence was further examined by the committee in executive session. The committee's action was taken as proof of a determination to keep the "monopoly investigation" from becoming a "witch hunt" and to make it objective and impartial.

Mr. Orvis was in trouble with the committee from the moment he took the stand, and could hardly finish a sentence without being interrupted by some member, usually Chairman O'Mahoney or the vice chairman, Rep. Hatton Sumners, of Texas. He started out with a string of adjectives derogatory to major oil companies and railroads and announced he intended to remove the halos from them. He was at once admonished by the chairman to refrain from adjectives and stick to facts, and a little later he was told it was not the purpose of the T.N.E.C. to remove halos but to ascertain economic practices and conditions which affect the interplay of competition.

The witness then attempted to prove that major companies have induced railroads to make rates which favor them and prejudice independents, and that some pipe-line companies have filed with the Interstate Commerce Commission what he called "counterfeit tariffs" in that the tariffs do not state all the charges and conditions under which the oil actually moves. Representative Sumners strongly objected to the use of the word "counterfeit," but before the witness could complete his explanation he was taken off the stand.

The charges which Mr. Orvis made were considered so serious by the chairman that he declared that if they can be substantiated they should form the basis of an investigation by the Department of Justice. Following an executive session, the committee ordered its executive secretary to "communicate with the authors, or, if necessary, the recipients of certain purported documents, letters, and minutes, copies of which were presented by Eugene L. Orvis, in order to determine the authenticity of such documents, letters, and minutes." Further action of the committee will await that study, and Mr. Orvis will be recalled later.

Marketing problems and the competitive position of independent jobbers and retailers will be the chief subject during the third and probably final week of the hearings. During the first 2 weeks the testimony dealt largely with production, conservation, transportation, and refining. Spokesmen for major companies predominated during the past week. Col. E. O. Thompson, chairman of the Interstate Oil Compact Commission, explained the way in which proration is handled by the Texas Railroad Commission; Robert C. Knox detailed leasing practices; Fayette B. Dow outlined transportation conditions and practices; Robert E. Wilson, president, Pan American Petroleum & Transport Co., discussed refining technique and developments; Sidney A. Swensrud, vice president, Standard of Ohio, told how major companies market gasoline; and a quartet of spokesmen for Pennsylvania refiners explained the difficulties of small companies in retaining outlets under present conditions.

The high point of Colonel Thompson's testimony was when he summed up the criticisms of proration in a single sentence:

"The whole trouble lies in the fact that we have never been able to establish a relationship between bottom-hole pressure and the note at the bank."

Dow Testifies on Pipe Lines

A significant observation was made during the questioning of Mr. Dow by Chairman O'Mahoney that the question of pipe-line divorcement from management and operation of integrated or major oil companies was not a vital question for his committee. "This committee is not so much concerned with questions of that kind," said Senator O'Mahoney. "What we are interested in is the question as to the effect pipe-line ownership and control has on competition and unemployment in the industrial system." Mr. O'Mahoney prefaced this with mention that a pipe-line divorcement bill is pending before the judiciary committee of the House of Representatives. The Cole bill to extend federal control and regulation over the industry is pending in the House.

Marketing practices were brought into the hearing by Mr. Swensrud, who was subjected to a barrage of questions. The committee particularly wants to know a breakdown of the costs of producing and marketing gasoline and the policies used in determining retail gasoline prices.

With the pipe-line equation, both crude oil and gasoline, a focal point of inquiry, the appearance of Fayette B. Dow, counsel for the American Petroleum Institute, intensified committee interest. So anxious were committee members to interrogate Mr. Dow that Senator O'Mahoney admitted they had interrupted the course of Mr. Dow's presentation, to which Mr. Dow rejoined: "No, go ahead; you all are putting in a better case for us than I had planned."

Traffic Lawyer Creates Flurry

A FLURRY was created Thursday morning when Eugene L. Orvis, lawyer and traffic consultant of Jersey City, N. J., charged that the president of the Association of American Railroads in January 1935 addressed a letter to executives of 13 major oil companies concerning a readjustment of interterritorial rates on petroleum products into the Southeast in exchange for the discontinuance by the oil companies of motor-truck haulage of their products from water terminals or refineries to the interior for distances in excess of 40 to 50 miles.

Later in the day the writer of the letter, John J. Pelley, president of the A.A.R., issued a statement saying Mr. Orvis' references led him (Pelley) "to believe that they refer to efforts made early in 1935 to bring back to the rails a large volume of gasoline which had previously been carried by rail and was then being transported in motor trucks." Mr. Pelley further stated that: "Those letters related to proposed arrangements looking toward that end which had previously been suggested by us to each of several oil companies for their consideration." The proposed arrangements would have become effective May 1, 1935. "They were not consummated, however, and were never put into effect," said Mr. Pelley.

The "quid pro quo" of the proposed arrangement as outlined in the letter attributed to Mr. Pelley also contemplated reformation by the railroads in southeastern territory of existing leases covering railroad property used for filling-station purposes; the discouraging of future leases of this character and the making of no further leases on terms more favorable to lessees than under the reformation plan.

The mention of the A.A.R. letter and charges that pipe lines were engaging in practices not authorized by their tariffs on file with the Interstate Commerce Commission then ensued. Mr. Orvis described gasoline moving through pipe lines under so-called "counterfeit tariffs" as "hot gasoline." The witness said he called this situation to the attention of the I.C.C.

At Thursday's hearing Mr. Orvis told the committee that the letter in question had been sent to the following companies: Standard Oil Co. of New Jersey, Texas Corp., Sinclair Refining Co., Shell Eastern Petroleum Products, Cities Service Co., Atlantic Refining Co., Standard Oil Co. of Kentucky, Gulf Refining Co., American Oil Co., Pan American Petroleum Co., Pure Oil Co. of Tennessee, Wofford Oil Co. of Georgia, and the Pure Oil Co. of the Carolinas.

Pennsylvania Independents

INDEPENDENT oil men from Pennsylvania, appearing on Saturday, declared that continuation of present monopolistic control of the natural outlet for gasoline and motor lubricants will result in the ultimate extinction not only of their oil industry but also of independent gasoline and oil refiners and marketers throughout the United States.

The results of this situation as it affects their main interest, branded motor oils, were stressed by executives of three companies, and their marketing specialist. A fourth company subscribed to the statement. Those participating included Charles L. Suhr, chairman of the board, Pennzoil Co., Oil City, Pa.; T. O. Grisell, general sales manager, Kendall Refining Co., Bradford, Pa.; W. R. Reitz, secretary, Quaker State Oil Refining Corp., Oil City, Pa., and their marketing specialist, Arthur W. Ramsdell, New York. The statement was joined in by the Wolverine-Empire Refining Co.

Mr. Suhr said the purpose of their testimony was to deal with marketing control over the natural retail outlets because of the belief that a free and open market no longer exists for gasoline and motor lubricants. "Free enterprise has been stifled in this field," he said. "Present conditions are not in the public interest, because the consumer is denied the right to purchase goods of his choice through the normal channels for such trade."

Mr. Suhr said Pennsylvania refiners have developed a national market for their motor oils through filling stations and garages. "For the past 10 years or more these companies have struggled to retain this market in the face of increasing difficulties by reason of the efforts of the so-called major oil companies to gain control over these retail outlets."

Mr. Suhr listed exclusion of the products of the independent producer and refiner from filling stations as point No. 1. "These practices are so universally used that they reveal a common pattern of major oil-company methods and policies throughout the United States," he said.

Other practices enumerated by the witness included the following:

1. Subsidies or the giving of free equipment, free paint jobs, free building construction, free paving, and, most effective, the granting of a ½-cent margin to retailers agreeing to exclusive sale of a company's products. "Although this price differential apparently applies only to the gasoline, it is used extensively to exclude competitive motor lubricants from retail outlets," Mr. Suhr contended.

2. Lease and sublease, or the practice whereby a major company leases an independently owned station for a fixed rental and then in turn subleases the property to the owner or a third party at the same time for a lower rental. This usually involves the supplying of free equipment, it was said. "Although the sublease usually contains no provision binding the lessee to handle exclusively the products of the major oil company, it has, as a rule, a short-term cancellation provision so that threats of cancellation and of withdrawals of equipment are sufficient to keep the dealer in line," the witness declared.

3. Credit cards. Pointing out that practically all major companies issue credit cards to consumers and carry the credit accounts for their dealers, Mr. Suhr said that "when a dealer shows a disposition to handle the motor lubricants of an independent refiner often the major oil company threatens to withdraw the credit-card privilege unless the dealer sends back the competitive motor lubricants."

4. Company-owned stations, said Mr. Suhr, have since the advent of chain-store taxes and social-security levies, been leased "to ostensible operators" under carefully drawn leases. Although there is no exclusive sales agreement in the lease, such instruments nevertheless contain the short-term cancellation clause which is an effective weapon.

Senator O'Mahoney questioned the marketing expert quite closely in an effort to ascertain whether these studies had revealed any evidence of concerted action by the major oil companies. Mr. Ramsdell replied in the affirmative, pointing out that 24 companies were offering these various inducements which the witnesses singled out. The principal volume of Mr. Ramsdell's findings was admitted to the record at the suggestion of committee counsel who pointed out that the data substantiated the conclusions drawn from the studies.

Senator O'Mahoney observed: "Doesn't it come down to the conclusion that it is becoming increasingly difficult for comparatively small companies to compete with huge companies throughout the United States?"

Mr. Grisell replied: "It is increasingly hard for independent producers to find outlets." The poor credit risks and "back-alley accounts," he said, are being left to the independents.

Queried by Senator O'Mahoney as to whether they had any remedial measures to suggest, Mr. Grisell said they had no suggestions, no legislation in mind. "We believe in the American way —a free and open market with no kind of subsidy," he said.

"Isn't this really the chain-store problem in another guise?" asked Senator O'Mahoney. "It is another meat-packer situation," said Mr. Grisell, i.e., paralleling the now-outlawed packer-owned meat markets. "We do hope for some form of equitable relief," Mr. Grisell said.

"Do any of you feel these practices can be classified as the application of force or as the working of competitive practices?" the senator asked. Mr. Grisell replied that threatening to take away credit cards, equipment, etc., amounted to force.

Enforcement by the Department of Justice and Federal Trade Commission of laws against unfair methods of competition, and especially the Robinson-Patman antiprice-rebate law, would benefit independent jobbers, Arnold W. Craft, Craft Oil Co., Avoca, Pa., told the committee Tuesday. New federal laws, he said, would only becloud enforcement although he favored divorcement of marketing and pipe lines. "The small, independent business man in the industry is rapidly being backed out of his own back door," Mr. Craft said. Enforcement of the Robinson-Patman law would eliminate major-company practice of granting exclusive station operators an additional ½-cent margin. It is at these stations that their line, Quaker State Oils, are excluded, he said.

Irving B. Culver, National Oil & Supply Co., Newark, N. J., Quaker State distributor in New Jersey and metropolitan district New York, also testified to elimination of their line in stations handling one major company's gasoline. Their company lost 172 accounts to majors in 1938, he said. Independents are induced by concessions from majors to drop their line, he averred.

Wilson Answers Questions

CLASSIFYING the refining process as the keystone of the petroleum industry, Dr. Robert E. Wilson, president, Pan American Petroleum & Transport Co., answered a wide range of questions. Responding to an inquiry from S.E.C. Commissioner Leon Henderson, Mr. Wilson said proration amounted to an interference with the natural laws of competition over a short period, but not over a long period, i.e., a 10-year average price. Questioned by committee counsel, Hugh Cox, he said prorated control could be exercised at a median point whereby prices could be maintained without backing up too much pressure for lower quotations.

Chairman O'Mahoney observed at this point: "We must acknowledge that the element of price has entered into the administration of proration —at some times and at some prices."

"There are unfair methods of competition and there are governmental bodies which should see that these are curbed," Mr. Wilson declared.

Actual advantages of integration were listed by Mr. Wilson as: (1) Greater stability in earnings, as earnings naturally fluctuate more in individual branches of the industry than in the industry as a whole; (2) less waste and lost motion in having to buy and sell several times between the well and the consumer; (3) greater confidence arising out of better assurance of supplies and markets, which is necessary to justify large expenditures for research and development and for the improvement of facilities all along the line; (Mr. Wilson interpolated here the remark that research can also be much more effective in a company which ties together all branches of the industry); and (4) the availability of capital from overall reserves to take advantage of opportunities in whatever branch of the industry they may arise.

The witness told the committee he did not think they appreciated that 80 per cent to 90 per cent of all refiners, large and small, own much if not all of the gathering systems and pipe lines required to get their crude to their refinery. "Of course the railroads, the tank-car operators, and some others who would profit by the disorganization of the industry, will still clamor for divorcement, but it will only serve to disrupt the whole distributive system, increase costs, and leave new oil fields without a ready market at a reasonable price."

"It may surprise you," Mr. Wilson said, "to know that within recent years my company has been offered a free half interest in two or three different pipe lines if we would agree to make a contract to purchase and run certain quantities of oil to keep the line operating somewhere near capacity, but on analysis none of these propositions appeared to be attractive." He explained aside that two of these lines were already in existence and the third was to have been built.

The closing down of many small independent refineries in the East Texas area was attributed by the witness to the fact that many of these plants were built to take advantage of a temporary oversupply of crude. Multiplication of these plants ensues as a natural progression of the competitive cycle, he explained. This very situation is developing today in Illinois, he said.

(Other Testimony on Page 39)

CALIFORNIA

GOVERNOR OLSON last week appointed Richard Sachse as director of natural resources to succeed George D. Nordenholt. Mr. Sachse will have direct charge of enforcement of the Atkinson oil-control bill if this measure meets with approval by the majority of the voters of the state on November 7. Opposing factions have started the political campaign to secure enactment or defeat of the Atkinson oil-control bill but will not really get under way for another week. Approximately 1,000 billboards carry the appeal to vote "No" on Proposition 5 at the November 7 election and proponents of the control bill have some 25 speakers to explain its provisions and appeal for votes. Some of these speakers started work last week and the balance will go on the air late in October. Opponents of the bill have come out with a picture of a shark and a statement that the Atkinson bill is another Sharkey measure. "Industrial monopoly" is also coming in for some caustic posters. The Atkinson bill has received approval of the state Democratic committee and Peirson M. Hall, former United States district attorney, was appointed director of the campaign to secure approval. John B. Elliott, who led the fight to defeat the Sharkey bill a few years ago and a close associate of Mr. Hall, will remain on the side lines, and has indicated he will take no part in the campaign. It is reliably reported that one and probably two of the major operators in California and on the Pacific Coast will shortly announce opposition to the measure. Two companies are definitely opposed to the Atkinson oil-control bill.

TEXAS

CONTINUED ATTACKS ON PRORATION ORDERS issued by the Railroad Commission were protested by Commissioner Jerry Sadler late last week, stating that such action would lead to regulation of the industry by federal-court injunctions, which would result in confusion and a breaking down of authority. Sadler's appeal was issued following the renewed attack of Humble Oil & Refining Co. on the method of allocating production in the East Texas field, which the company feels is not giving it its fair share of production on a reserve basis and is causing physical waste by a too-high top allowable for the whole field. Hearing on the supplemental petition for an injunction requiring the commission to give the company a higher allowable has been set for October 12 at Houston before a three-judge federal court.

Grounds cited by Humble as basis for the allegation that the present proration order violates the injunction issued to the company on August 11 by the federal court at Austin are: That the new proration order is substantially the same as the June 19 order, which was enjoined, in that both orders allocate the allowable production for the field substantially on a per-well basis and deny Humble an opportunity to produce its fair share of oil while permitting others to produce more than their fair share. Second, that the top allowable of 690,000 bbl. will cause a rapid decline of reservoir pressure and thereby create physical waste, thus by lowering the ultimate recovery of oil the order is confiscatory. Last, that the action of the commission in fixing a 20-bbl. minimum for each well capable of producing that amount is not required by law or the necessities of the case.

Humble alleges that it owns 14.3 per cent of the field's reserves, but the new order allows it to produce 11.15 per cent, thereby depriving it of 3.15 per cent or 21,750 bbl. daily. Also, that the new order, as the invalidated one, fails to make sufficient difference between the better and poorer properties in the field; that 506,920 bbl. of the 690,000-bbl. allowable is allocated on the basis of 20 bbl. per well, 6,558 bbl. is allocated to marginal wells, thus only 176,522 bbl. remain to be distributed under the new formula.

The new attack on the increased top allowable follows the company's contention in the original suit and at the extended hearing held by the commission in August that the field's top allowable need not be increased. In this regard the company alleges the field cannot produce in excess of an average of approximately 500,000 bbl. of oil and water per day without causing a great amount of physical waste. Continued withdrawals of fluid at the rate of 600,000 bbl. (about 150,000 bbl. of water daily) will result in a rapid decline of reservoir pressures and will result in physical waste, the company contends.

HENRY M. DAWES, president of Pure Oil Co., which owns about 540 oil wells in the Illinois basin fields, producing about 30,000 bbl. a day, has come out strongly for the passage of a law that will regulate oil production in Illinois. The Pure Oil Co. ranks fourth in current daily production in Illinois, but outranks all other companies in total oil produced in the basin area, having up to September 1, 1939, produced 15,600,000 bbl. Pure was the first operator in Illinois to complete wells of large output in the past 3 years. Mr. Dawes has been president of Pure Oil Co. since 1924. He is a native of Marietta, Ohio

LITIGATION INVOLVING CONSTRUCTION of oil-and-gas-lease tax liability, affecting the entire taxing and collecting program in Texas, was agreed to be reviewed by the Supreme Court last week. Because of the importance of the question, the court granted a rehearing of its prior refusal to issue a writ of error as sought by the state and Thomas O'Conner against Quintana Petroleum Co. and Humble Oil & Refining Co. and set the case for submission October 18 before a nine-judge court.

Under the lease contract O'Conner was to be paid $2,000,000 out of seven thirty-seconds of the oil, and the question arose whether O'Conner or the oil company was obligated for ad valorem taxes in Refugio County on this interest. Under the holding of the El Paso appellate court in 1936 it was argued O'Conner would be required to pay the entire ad valorem tax on one-fourth of the seven-eighths interest until all the $2,000,000 was paid. It was contended in the state's brief that the El Paso court decision was in conflict with a ruling of the U. S. Circuit Court of Appeals, which held the lessee liable. The attorney general's brief further contended that if the opinion of the Court of Civil Appeals were permitted to stand the state would lose about $1,000,000 a year in taxes and subdivisions also would lose large amounts; that it would upset the entire taxing and collecting program of the state as against the interest or estate retained by grantors in various leases made by owners where a part of the price is to be paid from oil production.

REQUESTS FOR INCREASED ALLOWABLES presented to the Railroad Commission now amount to almost 100,000 bbl. of oil in excess of the amount which the Bureau of Mines fixed as the October consumer demand for Texas crude. Additional hearings set for this and next week will bring the number of such hearings since the first of the month to about 30 and will raise the increased allowable requests even higher above the Bureau of Mines figure. Fields asking largest increases were: Panhandle operators, 10,800 bbl.; Saxet and Saxet Frio, 8,500 bbl.; Loma Novia, Clarkwood and Hoffman, 8,400 bbl.; Manvel, 2,400 bbl.; Plymouth and East White Point, 4,300 bbl.; several Southwest Texas fields served by Barnsdall Pipe Line Co., 4,700 bbl.; five West Texas fields, 7,400 bbl.; and K.M.A. approximately 6,500 bbl.

STATE CAPITALS

ILLINOIS

THE ADOPTION OF REASONABLE REGULATIONS in the new southern Illinois oil fields will result in larger oil recovery and greater return to thousands of farmers and smaller interests in the field, according to a statement issued on Friday, October 6, in Chicago by Henry M. Dawes, president of the Pure Oil Co., pioneer in the development of the 3-year-old field.

"The development of the oil fields of Illinois to a point where it has become a great producing state is a comparatively recent event," Mr. Dawes said, "but the problem that the state now faces in dealing with the situation is in its broad general principles identical with that which a number of other states have had to cope with in the last few years. Nearly all oil-producing states have laws regulating production. The thing which differentiates the production of oil from that of other commodities, is that oil moves below the ground from one property to another, and if it is assumed that a person owns the oil in place beneath his land, then some regulation either voluntary or by state authority is necessary to prevent one owner from operating in such a manner as to get the oil of another.

"We are fortunate in Illinois in having the experience of other states to guide us in preparing a law for this purpose. This experience will enable us to avoid mistakes of others and to adopt the sound policies they have developed. We do not have to pioneer but can follow with safety a course which is clearly dictated by experience. The necessity is urgent. The losses which will result from failure to meet this emergency will rest most heavily on the thousands of farmers and other owners of lands and royalties which are productive, as well as the operators of small tracts who need protection from surrounding neighbors with greater resources at their command.

"As matters now stand, it is my opinion that the total amount which will be recovered from the oil resources of the state will be much larger and the costs much less if reasonable regulations are adopted, and of course, the prosperity of the state and the individuals engaged in or affected by the industry will be increased. Conditions which prevailed only a short time ago were not such as to necessitate an action which now seems to me to be imperative."

ARKANSAS

THE ARKANSAS OIL AND GAS COMMISSION will hold a meeting in El Dorado at 10 a.m. Wednesday, October 18, to hear evidence for the purpose of determining the optimum daily rate of production of oil and gas from the following fields: Atlanta, Buckner, Dorcheat, Lewisville, Magnolia, Schuler and Village.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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Octane Outlook

The popular notion of oil outside the industry is too often limited to a gusher at one end and a filling station at the other. There is no idea of the intensive study and research that lies between, especially in the refining branch, which is giving the public constantly improved products.

As one step, some of the natural-gas fractions are now being coupled with byproducts from refining to make a superior aviation gasoline. Desirable hydrocarbons possessing antiknock value are obtained by synthesizing and utilizing materials available in refining in the form of gas or liquid to be subjected to temperature and pressure and by catalysis, completely changing their structure and characteristics.

This applies not only to aviation gasoline, which has assumed such importance because of war, but the same advantages accrue to the use of high-octane gasoline in ordinary motor cars.

At the present time, two large automotive manufacturers are conducting elaborate road tests at Detroit, using cars equipped with engines requiring 100-octane fuel. Through history we have seen that what is first accepted in aviation finds its way into the design of the ordinary automobile engine as the chemist is able to manufacture fuels of higher octane value.

Already we see 80 per cent of the modern tractors going out with engines requiring at least 70-octane fuel, which is the same as the house brand of motor fuel.

The trend towards high-compression motors demands the advantages of high-octane gasoline and also occasion the building of engines of extreme precision. This precision in turn introduces new problems.

The industry has passed through a period in which such materials as extreme-pressure lubricants, pour-point suppressants, sludge-forming retardants, etc., were required to meet the demand for operating these engines satisfactorily over a wider range of weather conditions and at lower cost.

Throughout this program it has become apparent that relatively few hydrocarbons or constituents of oil represent desirable fractions and relatively many should be converted.

Modern refining is separating the good from the bad by such means as solvent refining, chemical treatment, etc., but the ultimate still appears distant.

The same plea for limiting the number of hydrocarbons as put forth in the manufacture of lubricating oils and motor fuels is also apparent among men charged with as simple a job as choosing fuel for diesel engines. Whereas, almost any oil was considered suitable only 5 years ago diesel oil is now being purchased with as much care and scrutiny as gasoline.

These men prefer a very narrow fraction, which means it must be made of relatively few hydrocarbons stable in characteristics, and in a practical way this has meant that the oil must be highly paraffinic.

This has necessitated installation of viscosity breakers, and more careful selection and processing of crudes, until the industry is now able to produce about as clean oil as the fuel oil it supplies in any other of its products.

In the future the continuation of the trend toward higher quality will probably lead into even more elaborate syntheses, so that we will eventually wind up with using crude oil and natural gas as comparatively cheap and convenient sources of hydrogen and carbon to be combined in refining to make a list of rather simple products, each one of which is specifically designed for a definite duty, in contrast to the present practice of recovering those fractions which naturally occur in crude.

A. G. A. Seeks Clarification of Federal Commission's Policy

By H. STANLEY NORMAN

NEW YORK, Oct. 10.—Desire for an early commitment from the Federal Power Commission on policy regarding the natural-gas industry was expressed on every hand at the American Gas Association annual meeting in New York this week. Decision in the Chicago rate case holds the key to immediate acceptance of the demand for greater capacity in the long, high-pressure transmission systems from the Southwest to the Middle West and eastern consuming sections.

The topic of governmental restrictions occupied no place on the official program for the natural-gas division, or for that matter in the manufactured section. The half-day program of the Natural Gas Section was devoted exclusively to a forum on public relations, election of officers, and committee reports.

The general association turned again this year to a natural-gas man for its president. The newly elected chief officer of the A.G.A. is Walter C. Beckjord of New York, vice president and general manager of Columbia Gas & Electric Corp., who succeeds Conrad N. Lauer of Philadelphia, president, Philadelphia Gas Works Co.

Elmer F. Schmidt of Dallas, Tex., vice president of the Lone Star Gas Co., was elected chairman of the Natural Gas Section. Other new officers of this section follow: Harry D. Hancock of New York, president, Gas Advisers, Inc., vice chairman; H. C. Cooper, Pittsburgh, president, Hope Natural Gas Co.; J. D. Creveling, New York, president, Panhandle Eastern Pipe Line Co.; T. B. Gregory, Pittsburgh, president, Union Heat & Light Co., and N. C. McGowen, Houston, president, United Gas Pipe Line Co., all members of the executive committee.

In addition to Messrs. Schmidt, Hancock, and Beckjord, the Natural Gas Section's new managing committee is composed of:

Burt R. Bay, Omaha, president, Northern Natural Gas Co.; Joseph Bowes, Tulsa, president, Oklahoma Natural Gas Co.; A. F. Bridge, Los Angeles, vice president, Southern Counties Gas Co.; Floyd C. Brown, Chicago, vice president, Natural Gas Pipe Line Co. of America; R. E. Fisher, San Francisco, vice president, Pacific Gas & Electric Co.; R. H. Hargrove, Houston, vice president, United Gas Pipe Line Co.; T. H. Kerr, Columbus, vice president, Ohio Fuel Gas Co.; F. H. Lerch, Jr., New York, president, Interstate Natural Gas Co.; J. French Robinson, Pittsburgh, president, Peoples Natural Gas Co.; H. R. Straight, Bartlesville, vice president, Cities Service Gas Co., and Ralph E. Wertz, Amarillo, vice president and general manager, Amarillo Gas Co.

Taking office with Mr. Beckjord as president of the general association was T. J. Strickler of Kansas City, vice president and general manager, Kansas City Gas Co., who was elected first vice president, and George F. Mitchell of Chicago, president, Peoples Gas Light & Coke Co., second vice president.

Ernest R. Acker of Poughkeepsie, N. Y., president, Central Hudson Gas & Electric Corp., was reelected treasurer.

Thomas R. Weymouth, New York, vice president, Columbia Gas & Electric Corp., retiring chairman of the Natural Gas Section, presided at the public relations forum with B. C. Adams of Kansas City, vice president of Gas Service Co., leading discussions.

E. M. Tharp of Columbus, Ohio, vice president and general manager, Ohio Fuel Gas Co., gave a broad picture of public relations. "Humanizing an Organization" was discussed by Mr. Fisher of San Francisco.

A "skit" labeled "Because of These Things" was presented by H. Vinton Potter and John H. Warden of Tulsa, Oklahoma Natural Gas Co.

A highlight of the meeting was presentation of annual awards for outstanding contributions to the gas industry in technical or service fields. E. G. Hammerschmidt of Fritch, Tex., chief chemist, Texoma Natural Gas Co., received the Beal Medal for having contributed the best technical paper to meetings of the association. The paper, honored with a bronze medal and a substantial cash award, was presented at the Natural Gas Section meeting in Tulsa May 8-11, under the title "Preventing and Removing Gas Hydrate Formations in Natural Gas Pipe Lines." (The Oil and Gas Journal, May 11, 1939, p. 66.)

The meritorious service medal was presented by Mr. Lauer to Ralph Leslie Fletcher of Providence, R. I., vice president and engineer of the Providence Gas Co., in recognition of his "bravery, intelligence, judgment, and forceful leadership" during the hurricane of September 1938. The Charles A. Munroe Award for having made the outstanding contribution toward advancement of the industry went to James F. Pollard of Seattle, Wash., president, Seattle Gas Co., for the successful national advertising program. Of special interest to natural-gas engineers was a discussion of "Load Factors and Increment Costs in Transmission and Distribution of Gas" by Edward L. Fischer, Davenport, Iowa, engineer, United Light & Power Service Co.

Left: E. G. Hammerschmidt, recipient of the Beal Award. Below: Walter J. Beckjord, newly elected vice president of the A.G.A.; T. J. Strickler, first vice president; Elmer F. Schmidt, chairman Natural Gas Section, and H. D. Hancock, vice chairman Natural Gas Section

THE MARKETS*

CRUDE OIL: All Gulf Coast crude-oil purchasers increased their price schedules in the past week, following Humble Oil & Refining Co.'s advances. A 25-cent increase was posted in all Pennsylvania Grade fields, and Michigan fields were given crude advances ranging from 2 cents up to 8 cents per barrel. The Griffin area in Indiana and Illinois was given a 5-cent advance.

REFINERY: Dislocation of export-shipping schedules, owing to war conditions, has created spottiness in some divisions of the market because of the impossibility of maintaining an even flow of material from plant to point of consumption. Firmness is exhibited by most products, however, with tightness in the case of lubricants and wax. Natural gasoline continues to hold a strong position.

TANK WAGON AND POSTED DEALER: Standard of New Jersey and Socony-Vacuum advanced prices generally ½ cent along the Atlantic seaboard. Standard of Nebraska reduced its price structure on gasoline, kerosene, and tractor fuel, at the same time raising prices that had been below normal. The result was reduction in some cases and advance in others.

FINANCIAL: Oil issues showed little life and sank to lower levels along with the rest of the securities market. Average of 30 representative stocks for week ending October 7: High, 29.51; low, 27.95; close, 28.68. Week ending September 30: High, 29.78; low, 28.23; close, 29.11.

*Detailed information in market section.

DEATHS

IRA RINEHART, 41, publisher of Rinehart's Oil Reports, died October 6 at a Tulsa hospital. He was born at Omega, Okla., April 2, 1898, moving with his parents to Tulsa in 1911. He graduated from Tulsa High School in 1915, and began to write oil news for Tulsa newspapers. He established the Oil Reports in 1924.

GEORGE J. MALONEY, vice president of Maloney Tank Manufacturing Co., died October 8 at his home in Long Beach, Calif. Death was caused by a heart attack following influenza.

RICHARD VINCENT DENNISON, 59, formerly of Sistersville, W. Va., died on his ranch at Dennison, Wyo., September 27. He was born in Butler, Pa., son of W. A. Dennison, for many years chief executive officer of American Oil Development Co. After finishing school he engaged about 1906 in the oil-well contracting business at Bridgeport and Robinson, Ill. He then engaged in the oil business, associated with I. S. McMullen. About 1913 he went to Oklahoma and Kansas. In 1915 he was advised he must reside in a higher altitude and went to Wyoming.

I.P.E. Scientific Committee Honors Dr. Gustav Egloff

"Progress and Development in the Oil Industry" will be the theme of the scientific and technical displays at the International Petroleum Exposition in Tulsa May 18 to 25, 1940, it was decided by the committee in charge which was host October 6 at a dinner at the Tulsa Club to Dr. Gustav Egloff, director of research, Universal Oil Products Co., Chicago, and co-chairman of the committee.

It was announced that the Institute of Petroleum, in London, had bestowed fellowships upon Dr. Egloff and Dr. C. K. Francis, his cochairman and technical editor of The Oil and Gas Journal, for their valuable contributions to the industry through research.

Proration and War Needs Are Discussed at A.I.M.E. Meet

By NEIL WILLIAMS

GALVESTON, Tex., Oct. 9.—Many of the problems that now beset proration and the production situation can be overcome readily with few changes in state conservation laws and without federal regulation, J. Elmer Thomas, petroleum analyst, Houston, told the Petroleum Division of the A.I.M.E. at the closing session of the autumn meeting here Saturday. Mr. Thomas' address was read by T. V. Moore, newly nominated chairman of the division.

A paper prepared by V. R. Garfias and J. W. Ristori, Cities Service Co., New York, "Petroleum Supply of Axis Powers Short of Wartime Needs," closed the program which had been devoted entirely to technical treatises and discussions on operating problems.

Approximately 300 members of the Petroleum Division and visitors were registered for the three-day meeting.

Mr. Thomas indorsed proposals that administrative bodies should issue regulations that all wells be operated at their optimum rates of production. This, he said, would solve one of proration's most serious problems, that of equitable allocations between states, pools, and wells within individual pools.

"Fifteen years ago, or even 10 years ago, such a policy would have furnished a supply insufficient to meet the current demand; at present it is believed that all wells could be held at optimum rates of flow and still equal, or perhaps exceed (but only slightly) the enlarged present demand.

"The optimum-rate basis of flow cannot be adopted overnight; but, if steps are taken in that direction, it will help in solution of controversial problems. With the accumulation of a vast store of engineering data it would be possible to use the optimum-rate-of-flow basis as a fair, economic, and legal basis for allocations. If this rate of flow from present producing fields proves to be materially in excess of current consuming requirements, further curtailment of production should apply to flush fields, and not to stripper wells. If necessary to cut below the optimum rate of flow, relative reserves of the respective pools can be used as the most equitable factor in establishing relative allowables. It is not believed such restraint would be required in many cases for long.

"A large part of our proved reserves are undrilled. With daily production limited to optimum rates of flow, the additional wells could be drilled when and where necessary and, of course, a normal wildcatting program may be counted on to discover new sources of supply from time to time."

Mr. Thomas criticised the per-well basis for prorating outlets as being another problem of conservation and proration. A single well, or a single lease, is only a part of a pool, but conditions in a unit reservoir may be definitely affected by the operation of a single well.

To the question of market demand Mr. Thomas attributed much of the existing confusion in proration.

"The overall, nation-wide figures of supply and demand may indicate an apparently balanced schedule which is not in effect in unit geographical districts. One state may be underproducing and drawing on storage, while another may be

Left: Standing, behind, are R. J. Sullivan, Carter Oil Co.; K. B. Nowels, engineer and geologist, Abilene, Tex.; George B. Carless, Humble Oil & Refining Co., and member executive committee, Petroleum Division, A.I.M.E.; E. J. Kennedy, Jr., A.I.M.E., New York; A. S. Rhea, Sun Oil Co., Kilgore, Tex.; Chester Naramore, A.I.M.E., New York; Charles A. Warner, Houston Oil Co., Houston, Tex.; M. T. Halbouty, vice president, Merit Oil Co., Houston, Tex. Seated, front, are Harold Vance, Texas A. & M. College, Bryan; W. B. Heroy, vice president, Pilgrim Exploration Co., Houston, and vice president A.I.M.E.; Ben C. Craft, Louisiana State University, Baton Rouge, secretary-treasurer, Petroleum Division, A.I.M.E., and P. E. Fitzgerald, Dowell, Inc.

Right: Paul Weaver, Gulf Oil Corp., Houston, and member executive committee, A.I.M.E., and W. H. Geis, Union Oil Co., and chairman, A.I.M.E. Below: H. D. Wilde, Humble Oil & Refining Co., Houston; Harold Vance; A. M. Crowell; D. R. Knowlton, Phillips Petroleum Co., Bartlesville, Okla., and A. C. Loomis, Shell Development Co., Emeryville, Calif.

overproducing and adding to storage, while in totals a balance of supply and demand may be shown. A balance in each district is required to provide an ideal situation. An ideal producing program would have to provide for a fairly precise balance with current consumptive demand, a balance in amount, in grades of crude, and in proper districts, to serve the best markets for which it is needed, as established channels of trade are an important factor."

The paper by Mr. Garfias and Mr. Ristori was presented by W. B. Heroy, vice president of Pilgrim Exploration Co., Houston, and a member of the executive committee of the Petroleum Division of the A.I.M.E. The author's conclusions were:

As the situation is now, Great Britain and France are at war with Germany, but it would be hazardous indeed to predict what will happen even in the next few days. However, the writers believe that the facts presented support certain inferences of which the more important are as follows:

1. That a successful blockade of petroleum and its products against Germany and any active allies it may gain is one of the most effective weapons of Great Britain and France.

2. That Russia has not sufficient exportable surplus of petroleum, either on a peace or wartime basis, for that country, to be of much assistance in supplying Germany's needs; and that even if the Russian supply were made available, difficulties of transportation appear insurmountable at least during 1940.

3. That the Rumanian field even under complete German control could not furnish enough petroleum for Germany's wartime needs in 1940; and, even if it could, the transportation of such large supplies of oil from Rumania to Germany would be extremely difficult, if not impossible.

4. That Italy's entrance into the war as an ally of Germany would increase Germany's difficulties of petroleum supply, for if an efficient blockade is maintained against the Axis power, Italy would have to get practically all her oil supplies from Rumania, lessening by that amount the volume available for Germany; and that, under the circumstances, it is far more advantageous to Germany to have Italy as a neutral than as an active ally.

5. That the evident ways in which Germany might avoid or lessen the dangers of a stringent petroleum shortage are:

(*a*) Make peace or bring the war to a successful ending within 1940 before she exhausts her stored supply of petroleum products.

(*b*) In conjunction with Italy or other countries as an active ally, or allies, secure control of shipping in the Mediterranean and of the Iraq fields and the Iraq-Mediterranean pipe line.

(*c*) Achieve these objectives, if possible, while Italy yet maintains neutrality.

(*d*) Accomplish all this without coming to a break with the Balkan countries, which no doubt would be greatly disturbed by a shortage of petroleum.

In closing, the authors cannot refrain from pointing out that by its treaty with Russia and subsequent occupation by this country of the Polish-Rumanian frontier, Germany gave up the possibility of taking possession of the Rumanian fields as she did during the World War. And one wonders what will happen to Germany should its relation with Russia cease to be friendly. Obviously, it should be comparatively easy for Russia to control these fields or at least to prevent Germany from controlling them. Should Russia directly or indirectly deprive Germany of this oil during this war the results would be catastrophic.

As shown in this study, Rumanian oil is absolutely vital to Germany even if it does not supply all her wartime needs.

TABLE 3—PRODUCTION OF PETROLEUM AND RELATED FUELS

(In thousands of barrels)

	Russia*	Rumania	Germany	Poland	Italy*	Hungary	Total
1937	200,000	53,000	15,300	3,900	500	..	272,700
1938	208,000	49,000	17,300	3,900	500	300	279,000
1939†	223,000	50,000	20,000	4,000	‡1,000	1,000	299,000
1940†	240,000	55,000	25,000	4,000	‡1,200	1,800	327,000

*Excludes Sakhalin Island production. †Estimated. ‡Includes Albania.

TABLE 4—RUMANIAN REPORT IN 1938

(In thousands of barrels)

	Crude	Gasoline	Kerosene	Fuel oil or bunkers	Lubricant	Total
Germany	114	3,021	1,000	1,214	92	5,450
Czechoslovakia	802	1,149	336	65	...	2,352
Total	916	4,170	1,345	1,279	92	7,802
France	254	1,890	225	23	..	2,392
United Kingdom	...	1,785	1,113	1,341	..	4,239
Spain	...	811	....	268	..	1,079
Belgium	...	507	...	269	..	776
Switzerland	...	646	....	42	..	688
Greece	...	381	173	941	..	1,495
Tunisia	...	372	126	115	..	613
Italy	489	363	405	2,655	..	3,912
Hungary	305	350	416	299	..	1,370
Syria	...	282	231	116	..	629
Yugoslavia	247	279	250	264	..	1,040
Denmark	...	224	...	...	..	224
Egypt	...	219	1,016	816	71	2,122
Palestine	...	194	242	85	..	521
Sweden	...	172	....	54	..	226
Morocco	...	171	....	...	..	171
Turkey	...	109	....	189	..	298
Algeria	...	106	....	...	..	106
Bulgaria	185	103	149	132	..	569
Malta	...	...	155	71	..	226
Bunkers	...	....	....	2,550	..	2,550
Miscellaneous	59	340	565	74	121	1,159
Total	2,455	13,474	6,411	11,583	284	34,207

Rumanian production in 1938 was close to 49,000,000 bbl. of which 34,000,000 were exported, as shown in above table and approximately 15,000,000 were consumed in the country or put in storage.

TABLE 5—ORIGIN OF IMPORTS OF PETROLEUM AND ITS PRODUCTS 1938-1939

(In percentages)

From—	United Kingdom	France	Germany	Italy	Turkey	Hungary	Greece	Bulgaria	Yugoslavia	Switzerland
U.S.A.	18	35	24	39	52	...	...	...	...	34
Mexico	2	..	9	1	..	...	...	...	...	..
Venezuela	38	10	44	16	...	...	...	...	...	6
Colombia	..	5	..	5	...	...	...	...	...	...
Peru	1	5	3	...	...	...	...	...	...	...
Trinidad	8	...	...	...	...	...	...	...	...	...
Total from America	67	55	80	61	52	...	...	...	...	40
Iraq	5	39	..	10	...	...	...	...	...	...
Rumania	3	3	10	20	26	100	100	100	100	30
Russia	2	1	2	...	22	...	...	...	...	...
Total from Near East	10	43	12	30	48	100	100	100	100	30
Iran	20	1	4	3	...	...	...	...	...	15
D.E.I.	1	..	4	3	...	...	...	...	...	...
Total from Far East	21	1	8	8	...	...	...	...	...	15
Miscellaneous	2	1	..	1	...	...	...	...	...	15
Total	100	100	100	100	100	100	100	100	100	100

TABLE 6—IMPORTS BY PRODUCTS

(In percentages)

	France	Germany	Italy	United Kingdom	Bulgaria	Greece	Hungary	Turkey	Yugoslavia	Switzerland
Crude oil	85	15	57	18	32	...	83	..	85	..
Gasoline	8	32	5	46	15	26	...	33	3	55
Kerosene	..	..	2	6	24	3	..	29	6	5
Lubricants	8	7	1	4	8	...	2	...	3	4
Benzol	2	...	...	...	...	...	...	...	...	...
Residuum	..	9	...	...	...	...	...	...	...	...
Fuel oil	6	37	35	26	21	71	15	38	3	36
Total	100	100	100	100	100	100	100	100	100	100

TABLE 1—CIVIL CONSUMPTION OF PETROLEUM AND RELATED FUELS

(In thousands of barrels)

	Russia	Germany	Italy	Rumania	Poland	Hungary	Switzerland	Greece	Turkey	Yugoslavia	Bulgaria	Total
1937	158,200	45,300	20,000	12,600	2,800	1,900	3,300	2,400	1,200	900	800	249,400
1938	164,500	53,000	21,000	14,200	3,400	2,000	3,500	2,400	1,200	1,000	800	267,000
1939*	175,000	55,000	23,000	15,000	3,000	2,000	3,700	2,500	1,200	1,000	800	282,000

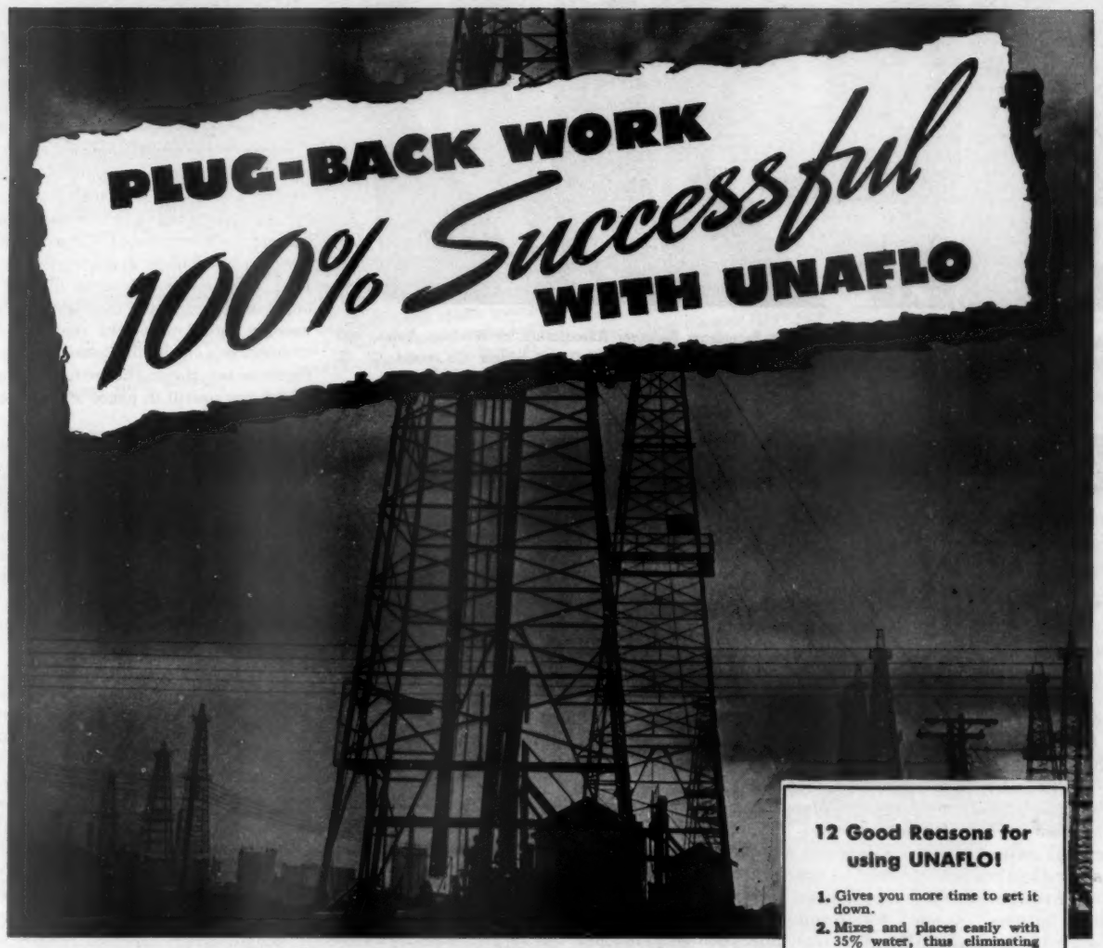
*Estimated.

TABLE 2—CIVIL AND MILITARY CONSUMPTION OF PETROLEUM AND RELATED PRODUCTS

(In thousands of barrels)

	Russia*	Germany*	Italy	Rumania	Bulgaria	Hungary	Switzerland	Greece	Turkey	Yugoslavia	Total
1940†	240,000	90,000	40,000	20,000	1,100	2,500	4,000	3,000	2,000	1,400	404,000

*Includes part of Poland. †Estimated.



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7. Not affected by salt water contamination.
8. Sets satisfactorily in sulphate water.
9. Meets the requirements for sulphate resistance.
10. Makes squeeze and plug-back jobs easier, surer, more successful.
11. Permits operator to control cement rather than being controlled by it.
12. Has been proved by oil industry by consistently "coming through in the clinches."

OG-U-9

Universal Atlas
CEMENTS

Here are a trio of speakers at the meeting of the Western Petroleum Refiners Association, at Wichita, Kans., last week. E. L. Dennis, Coppus Engineering Corp.; Dr. Gustav Egloff, Universal Oil Products Co., and C. G. Krieger, Ethyl Gasoline Corp.

W.P.R.A. Papers Show Trends in Refining

By W. T. ZIEGENHAIN

WICHITA, Kans., Oct. 5.—Authorities on subjects of unusually timely interest spoke before the technical meeting here today of the Western Petroleum Refiners Association, attended by 80 refinery operators, chemists, researchers and equipment engineers. A frank and intimate presentation of ideas on refinery-operating practices developed. Considerable time was devoted to the manufacture of high-octane motor fuels, tractor fuels and modern burners. A most significant statement was made by Dr. Gustav Egloff in this respect: "In the East 76-octane house-brand gasoline is common, and within the next 6 months or a year you will have it out here."

As the subject of high-octane gasolines was developed, he referred to the large-scale application of alkylation and polymerization in their manufacture and more specifically to the manufacture of modern aviation gasolines. Within a few years he thought we should expect to see 100-octane gasoline required for use in ordinary automobile engines. Its use in automobiles will be prompted by the same advantages as this grade now presents for use in airplanes.

Commenting specifically on 100-octane aviation fuels, he reminded those present that such fuels are now available in large quantities only in the United States. "Furthermore," he said, "the spread of the present war would make this country the primary source of all modern fighting fuels." Speaking of the relative positions in which the present warring nations find themselves, he said, "Germany has no process nor can she readily develop the large-scale manufacture of 100-octane fighting fuels."

He continued: "The question of what quantities of 100-octane or higher fuels this country might develop may arise in our minds. It is roughly estimated that at least 300,000,000 bbl. of this material could be produced annually for many years and from our present known oil supplies and proven processes. Within a relatively short period the equipment needed to make this quantity could be built. Existing refineries and gasoline plants would recover the base materials in the form of isomers and unsaturated light hydrocarbons, which would be shipped to centralized points where alkylation plants would be built. Additional crude would be required, of course, to supply the quantity of aviation fuels if the normal automobile consumption continued.

Digressing from the subject of manufacturing aviation fuels to their use, he said: "In talking with men who understand fighting in the air I find they consider airplane speed quite essential They also tell me they prefer to have the plane in the position to machine-gun down, rather than up. Obviously, the plane which is equipped to climb the fastest has the advantage in combat."

Aviation-Fuel Consumption

Some idea of the speed and fuel consumption of modern pursuit planes may be had from a recent flight of 410 miles made by a British plane within a period of 49 minutes. The average gasoline consumption of a single-motored plane of this type, when traveling at high speed, is from 60 to 65 gal. per hour, and a double-motored ship of the high-speed bomber type will consume from 90 to 100 gal. per hour.

To accomplish fighting speeds, foreign countries which do not possess fuels of naturally high octane value have generally used more tetraethyl lead in the gasoline than in the United States. Foreign blended fuels containing up to 6 cc. of lead are common. One country uses up to 10 cc. per gal.

In this connection, Dr. Egloff explained that mass flights of fighting planes discourages the use of large quantities of lead because the exhaust gases from the front ships could contain harmful quantities of lead-bearing gases which would be inhaled by men in the rear planes. These gases tend to lessen the alertness of the men in battle. For this reason, 100-octane fuels containing a minimum of lead are preferred, and this demand is causing the installation of alkylation units on an ever-broadening scale.

Dr. Egloff explained the term "alkylation" by saying that its present application simply involves joining together an isomer such as isobutane with ethylene or propylene to produce isoparaffins such as neohexane. This may be done by temperature and pressure alone or by the use of catalysts. He said commercial units of both types are in operation.

The next step in synthesis, he predicted, would be the isomerization of straight-chain hydrocarbons. He chose for his example the isomerization of heptane. This is a common motor-fuel constituent and has an antiknock value of zero. However, by simply converting this into a cyclic compound in which the carbon and hydrogen atoms are rearranged, trimethyl heptane could be produced. This has an octane equivalent of 125. He said the first gallon of the latter material cost $3,600 to produce in the laboratory several years ago and at present is worth about $20 a gallon. In time, he predicted, it will be made in refineries from petroleum cheaply enough to be burned in automobile engines. He said the country will also eventually become conscious of the ready availability of petroleum as a cheap and convenient source of hydrocarbons for the manufacture of many materials which are useful in peace as well as in war.

Tractor Fuels

The trend toward the use of higher-octane fuels is also evident on the farms, according to C. G. Krieger, engineer with Ethyl Gasoline Corp., who had just completed a long and detailed study of tractor fuels. He said: "Tractor-engine-power output has been increased 34 per cent by increasing the compression ratio and cooling the carburetor." In this he was comparing the modern gasoline tractor engine with the distillate tractor engine of several years ago. He continued: "The modern gasoline engine has an average mean effective pressure on compression of 75 lb. per sq. in. against the average automobile engine of 125 lb." It is, therefore, easy to understand why the field of improving tractor-engine operations is being attacked and why such large improvements in tractor efficiencies can be reported. To show the extent to which these improvements have been made, he said: "It is safe to say that at present 80 per cent of the tractors going out are designed to burn 70-octane house-brand gasoline. About 85 per cent of them travel on rubber." He was careful to credit rubber tires with a large share of the improved tractor-engine operation and went so far as to say about half of the better performance of tractor engines was due to this factor. He said the advantage of high-compression motors has been so pronounced that farmers are replacing the pistons in old engines with ones of a design that enable them to use advantageously 70-octane fuel.

Over the future he thought developments in tractor engines would follow the same lines as developments in automobile engines and higher compressions seemed likely. There is no advantage in using a high-octane fuel if the motor is not designed to utilize it effectually. "For that reason," he said, "the engine manufacturer and the refiner have a common problem." Only 4 years ago, practically every new tractor was designed to burn kerosene or distillate.

He said the first high-compression tractor engine appeared in 1913. It was declared to be a decided improvement as an engine. Since then manufacturers have been forced to design tractor engines capable of operating over a wider variety of fuels. As a result, the combination engines are less efficient than if designed to burn any one of the fuels. Now, since a standardization of engines and fuels is taking place, the engine which demands 70-octane house-brand fuel is being suggested almost exclusively.

Commenting upon the lubrication of modern tractor engines, Mr. Krieger said modern engines are almost duplicates of automobile engines and the same lubricating problems exist throughout the entire tractor as are present in modern trucks.

(Continued on Page 37)

● In line with other Ideal deep drilling equipment, the heaviest duty slush pump made is now available for oil field use—the 15½ x 9¼ x 22. Two of these pumps are shown above, operated by steam from 500-pound Broderick domeless boilers, at Superior's Moodie No. 1 well.

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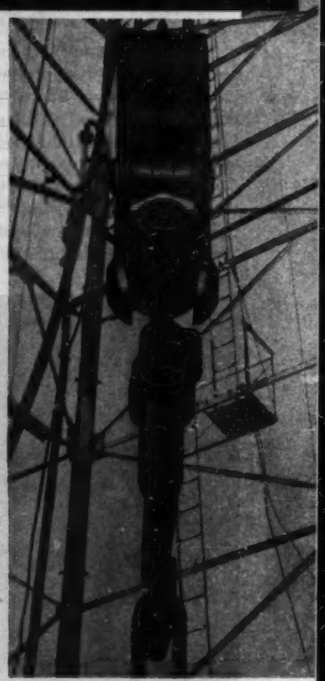

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Taxation, Legislation Stir Texas Oil Men

By F. L. SINGLETON

HOUSTON, Tex., Oct. 9.—Increasing taxation, threatened federal legislation, and ways of combating these and solving other problems facing the industry were the chief topics at the twentieth annual convention of the Texas Mid-Continent Oil and Gas Association in Houston October 5 to 7.

C. P. McGaha, Fain & McGaha, Wichita Falls, retiring president, stressed the need of a friendly and understanding relation, saying it had been neglected due to physical and economic problems until now it has become one of the major problems. "The very life and continued existence of our oil business as an independent enterprise is at stake. Laws and regulations, unfriendly and uninformed officials, an indifferent and uninformed public, often misled by demagogues with deliberate misinformation, arise to plague us."

Mr. McGaha thought too many people in Texas looked upon the petroleum industry as some sort of huge octopus operated by remote control rather than as a humanized business conducted by men in Texas, and if we are to enjoy sound public relations and sympathetic understanding of our many problems, we must put our human side forward.

"Even though our tax rate per barrel of oil is at the highest level in the history of Texas oil, being 9.8 cents per barrel, nevertheless the aggregate tax collections on oil production have actually shown a material decrease compared to collections made when the tax rate was lower. The law of diminishing returns is concretely illustrated. High taxes, low oil prices, constantly rising operating costs and reduced per-well allowables, have had a telling effect on the turnover of capital and employment generated by the oil industry."

Mr. McGaha said the Texas oil business spends over $700,000,000 a year in the normal operations and at the end of the year seldom has any ready cash at its command. Its potential earnings remain in the ground. This amount of money, Mr. McGaha said, exerts a tremendous economic effect upon the state and its people, and when such facts become more fully recognized there will be less tendency to increase the tax burden on oil.

Loans to Industry

A survey by the association of bank loans to oil operators showed that as per-well allowables have been reduced the amount of borrowed capital has increased. When the per-well allowable in Texas was 20.5 bbl., Texas bank loans to the industry amounted to $26,000,000 and today with the per-well allowable in Texas about 15 bbl., Texas bank loans aggregate $68,000,000.

"State and out-of-state loans, credit advance to oil operators by supply companies, and the funded debt chargeable to the Texas oil industry amounts to the stupendous total of $797,000,000," Mr. McGaha declared.

Mr. McGaha concluded by saying that oil men stood ready to meet any emergency in national defense, but should lend every force to keep America out of the conflict.

R. B. Anderson, Waggoner Refining Co., Vernon, chairman of the tax committee, said that, while the recent legislature did not increase the tax on oil, leading many to believe the industry had escaped an increase in taxation this year, this belief is untrue. An analysis shows an increase of another ½ cent per barrel, making the total tax paid by producers average 9.8 cents. This increase was brought about by a higher ad valorem tax. Every year since 1935, official figures have shown an increase in the average tax rate per barrel of crude produced in Texas.

E. L. SMITH

New president of the Texas Mid-Continent Oil and Gas Association. Mr. Smith is a Dallas independent operator

Texas oil operators are now paying the highest tax on oil in the nation. "This is a fact which the industry, and the public at large, should know and appreciate, because there are those who would tax the industry out of Texas by telling the people that this great natural resource is being taken out with little or no public benefit."

As a result of curtailment, production this year will probably not exceed 460,000,000 bbl. The price of Texas crude will average for this year about $1 per barrel. This will make the gross-production tax per barrel amount to 2¾ cents

In the photograph at left, T. J. Donoghue, retired vice president of the Texas Co. (right), receives association award presented by McDonald Meachum. In the photograph at the right, E. De Golyer (right) receives association award presented by John R. Suman

which means Texas will have collected in gross-production taxes this year the sum of $12,650,000. In addition, regulatory taxes on production at 1/4 cent per barrel, will bring a tax revenue of $860,000.

While the tax is higher than last year, the state will receive $2,000,000 less in gross-production taxes due to curtailment and low prices. "On the other hand, our ad valorem tax will show in increase of $3,600,000. The total will amount to approximately $28,000,000 against $24,400,000 last year. The net result is that you are paying more taxes on less production, and receiving a greatly reduced revenue." The extent to which Texas oil operators have had their production curtailed is shown by the fact that the annual production of per well in 1935 amounted to 7,487 bbl., while this year the average Texas well will produce only about 5,400 bbl. This means, Mr. Anderson said, a loss of revenue from the average Texas oil well of $2,600 this year compared with 1935.

Howard Coonley, New York, president of the National Manufacturers Association, asked the oil industry's aid in keeping the United States out of war. He urged oil men to keep prices of their products related to cost.

Guy C. J. Jackson, county judge of Chambers County, and George H. Sheppard, state comptroller, discussed taxation.

Election of Officers

E. L. Smith, independent operator of Dallas and Mexia, was elected president of the association, and other officers were reelected: George C. Gibbons, executive vice president; Eugene McElvaney, Dallas, treasurer; H. R. Cullen, president, Quintana Petroleum Co., Houston, vice president, Gulf Coast district; Al Buchanan, Al Buchanan Production Co., San Antonio, vice president, Southwest Texas district; Lynn Boyd, Pampa, vice president, Panhandle district; John O'Donohoe, Wichita Falls, vice president, North Texas district; Harry Adams, Adams & Bradley, Midland, vice president, West Texas district; A. J. Frazier, Abilene, vice president, West Central Texas district; J. L. Collins, Corsicana, vice president, East Central Texas district, and Bryan W. Payne, Iowan-Payne, Tyler, vice president, East Texas district.

Ten new directors were elected: D. W. Hovey, Houston; W. C. Windsor, Tyler; R. B. Anderson, Vernon; Wallace Hawkins, Dallas; Harry Mosser, Alice; J. H. Snowden, Fort Worth; J. B. McAdams, Beaumont; Clarence Scharbauer, Midland; Sam Ross, Kilgore, and Guy I. Warren, Corpus Christi.

Membership Shows Increase

E. L. Smith, as chairman of the membership committee, reported a total membership of 1,400, an increase of 99. He hoped it could be increased to 3,000 by the end of next year.

Paul W. Pitzer, chairman of the theft prevention committee, recommended that all tools and equipment be branded and the brands registered with the association, that all thefts be reported immediately, and that small warehouses install inexpensive burglar alarms.

Work of the association's social security committee in simplifying separation notices and other details was discussed by Raymond M. Myers, of Dallas, chairman. The report of the forms simplification committee was presented by Guy L. Tate, chairman.

Dr. Homer P. Rainey, president of the University of Texas, spoke on "The Changing Economy of Texas and Its Implications," and Sen. Carl A. Hatch, of New Mexico, declared America's destiny lies within America.

The association's annual awards for distinguished service to the oil industry were presented to E. De Golyer, Dallas, representing the independents, and T. J. Donoghue, retired vice president of Texas Co., representing the major companies. The awards, handsome desk clocks, were presented by John R. Suman, vice president of Humble Oil & Refining Co., to Mr. De Golyer, and by McDonald Meachum, Houston, to Mr. Donoghue.

Charles P. McGaha, president, Texas Mid-Continent Oil and Gas Association; J. C. Hunter, president, General Mid-Continent Oil and Gas Association; Dr. Homer P. Rainey, president, University of Texas; A. J. Frazier, vice president, West Central Texas; Harry Adams, vice president, West Texas; Bryan W. Payne, vice president, East Texas

George C. Gibbons, executive vice president; John F. Donohoe, vice president, North Texas; Eugene McElvaney, treasurer; H. R. Cullen, vice president, Gulf Coast; Al Buchanan, vice president, Southwest Texas; Paul W. Pitzer, chairman, theft prevention committee

Trends in Refining

(Continued from Page 34)

buses or passenger cars. The new tractors generally have relatively small crankcase capacities and generally utilized lighter oils. He said the old 2 and 3-gal. crankcase has been replaced with a 5 or 6-qt. case. The 15-gal. transmission housing generally used has been replaced with one requiring but 15 lb. of grease.

In conclusion, he said tractor fuel and oil consumption is an increasing factor in farm oil needs and that one-fourth of the total oil consumed in the United States is purchased by farmers. This fact should not be overlooked by refiners and marketers. Farmers purchase in the same ratio of quality as urban buyers. He said he found no disposition in farming communities to underestimate quality.

Modern Burners

Another subject of practical interest, especially well covered in the original paper and in the discussion which followed, was "New Developments in Burners, Combustion Characteristics and Applications" as presented by E. L. Dennis, chief combustion engineer for Coppus Engineering Corp. He emphasized the multiplicity of chemical reactions that take place during the oxidation or combustion of hydrocarbon gases or vapors as they are supplied to the burners in a refinery still or boiler.

As an example of the normal conception of a combustion reaction, he chose the oxidation of methane, in which the reaction may be shown as

$$CH_4 + O_2 \rightarrow CO_2 + 2H_2O$$

He pointed out the intermediate reactions that may take place in what he termed "progressive oxidation," mentioning the formation of aldehydes and acids of this hydrocarbon. These, he said, were formed momentarily and were completely oxidized to carbon dioxide and water vapor. This showed the importance of balancing the supply of air or oxygen coming into the fire box. It was first necessary to make sure the supply is adequate and then to make sure it is not in too great excess. He indicated that a reasonable excess was to be preferred to even a slight deficiency.

In modern burner design, he said, preference is being given the short-flame type. This type provides more radiant heat. Preference is being shown for burners of the premixing type and of the directional type.

For horizontally fired heaters he advocated use of rough furnace floors so that any heat which came to the floor might be reflected upward and to the sides of the room where it may be absorbed by the tubes. When questioned in connection with burning powdered coal, he indicated temperatures might be generated which would fuse brick or other objects placed in the furnace floor as baffles, and if this comes about a rough floor soon loses its advantage.

One question directed to Mr. Dennis was whether the surface of the heater tube was a factor in its heat-absorbing properties. He answered: "We all recognize that a tube is the most efficient just before it burns up." This, he said, is due to the greater surface exposed by the corroded tube and it should be possible to develop irregularly shaped tubes or extended-surface tubes which would provide this extra surface and efficiency.

John Day, secretary of the W.P.R.A. and chairman of the meeting, thanked the speakers and announced the coming regional technical meeting to be held in Shreveport, La., October 27. He said the latter meeting would include a program as interesting and important as the one just concluded, and he invited all to attend.

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Marketing Ramifications Are Explained by S.A. Swensrud

PRESENTING an analysis of petroleum marketing to the T.N.E.C., Sidney A. Swensrud, vice president, Standard Oil Co. of Ohio, said in part:

There are some differences between the complaints of two types of jobbers, wholesalers, and distributors. Basically wholesalers complain that it is difficult to make a profit. Some of them even argue that the integrated companies deliberately endeavor to "squeeze" wholesalers out of the industry. Since wholesalers must sell their private brands at prices below those of the brands of major companies, the problem is how to do it and still make a profit. Wholesalers ordinarily are not able to undersell on the basis of lower costs of bulk-plant operation. Hence, if wholesalers are to undersell, they usually must accomplish this end by reducing retail costs through high volume at cut prices or by buying at lower prices. Thus there are two situations in which wholesalers get along very well, namely, periods of business depression and periods of rapid exploitation of new sources of crude petroleum; for in both these situations there are plentiful supplies of cheap gasoline.

For both wholesalers and distributors there has admittedly been a decrease in the margin or spread during recent years. In this connection one peculiarity of the oil industry should be kept in mind. It is customary to think of margins or spreads in this industry in terms of so many cents per gallon. In many instances marginal contracts are used which provide that the price to the distributor is to be a certain number of cents off the posted tank-wagon price in the territory; but whether marginal contracts are used or not it is customary throughout the industry to think of margin or spread in terms of cents per gallon. This is quite a different point of view from that of a majority of other lines of business, where it is customary to think of margins in terms of percentages either of cost or of selling price, such as 16⅔ per cent, 20 per cent, 33⅓ per cent, and so on. Such percentage margins, of course, are not directly affected by price changes; but where margins are in terms of cents per gallon it is manifest that the declining price structure of the petroleum industry must inevitably have exerted pressure on these margins.

The other chief factor which has exerted pressure on the margins of wholesalers and distributors is the decrease in the cost of performing the wholesale function, that is, the decrease in the cost of operating bulk plants. The major integrated companies have taken the lead in developments which have made this cost reduction possible. New transport trucks and new types of trucks for making deliveries from bulk plants to filling stations, coupled with improvements in highways, have brought lower unit costs directly and have made possible other savings from the consolidation of bulk plants.

The Making of Prices

The assumption that all or almost all the business is done at posted prices has led many investigators into completely fallacious reasoning. For example, comparisons have been made of posted tank-car prices with posted tank-wagon prices, purporting to show the spread or margin available to jobbers. In fact, for many companies and for many territories the great bulk of the jobbers do not pay the posted tank-car price. Again, one encounters comparisons between posted retail prices and posted tank-wagon prices which purport to show the spread or margin available to retailers. Actually, as many motorists will testify, a considerable share of the retail business is done at less than posted prices; and it is by no means certain that dealers consistently and uniformly pay posted tank-wagon prices.

Brokers typically find their place in transactions between foreign buyers and small refiners. Indeed, it is not too much to say that the foreign buyer is the primary reason for the existence of the broker. Large integrated companies seldom engage in transactions with brokers except where the initiative has been taken by the broker as the result of a foreign inquiry. The broker is primarily the buyer's agent, and as such it is his duty to get the best possible price for his client. Ordinarily bargaining is involved, and the broker commonly finds that it is easier to bargain with the small refinery; that is, he is more likely to receive a price concession from the small refinery than from the large integrated company. A second reason why most brokers' transactions are with small refiners is that many of the large integrated companies have their own foreign representatives to whom foreign inquiries are customarily addressed.

No petroleum market today is dependent upon a single source or even a few sources of supply; and, conversely, a producer or refiner is not limited to any one market. A price rise in any marketing area is an open invitation to suppliers from more remote areas to which they are quick to respond. If a refinery finds itself confronted with a large accumulation of stocks, it immediately casts about for a marketing area into which it can move its products.

Refinery Tank-Car Prices

The second type of price to which attention should be directed is the posted refinery tank-car price. Fundamentally the making of this price involves two lines of approach: first, determining the total of the costs incurred up to that point, plus a desired profit; and, second, reviewing the demand considerations which tend to indicate what price can be secured for the gasoline.

Some refiners who do not compute a cost for gasoline for their own refineries use these quoted basic market prices for gasoline plus quoted transportation costs (which for marine transportation fluctuate frequently) to arrive at an imputed cost for gasoline at refineries or terminals. In other instances refiners make a limited use of cost reasoning by deducting from destination prices all transportation and other costs after refining, computing a net-back at the refinery, and then considering this net-back in making their decision whether or not to go after the business.

Posted Consumer Tank-Car Prices

For resellers buying in tank-car quantities, the posted consumer tank-car price is very largely a nominal quotation. Computations of resellers' margins by comparing posted consumer tank-car prices and posted tank-wagon prices are therefore bound to be in error.

For actual consumers the posted consumer tank-car price is somewhat less nominal than it is for resellers. In this market it is a real bench mark, a figure on which to begin negotiations. The difference in the attitude of the supplier toward the consumer tank-car price as it affects resellers and as it affects actual consumers might be put this way: The supplier posting the price has no real expectation of securing the posted tank-car price from any large number of resellers, whereas he does hope to get the posted consumer tank-car price from a substantial number of commercial consumers. Normally most companies realize this expectation, but the volume which moves to consumers below posted tank-car prices is far from negligible.

Posted Tank-Wagon Prices

In different sections of the country the amounts added to the consumer tank-car price to get the posted dealer tank-wagon price differ approximately with differences in costs. Because of higher costs in the South, for example, where customers are scattered and tank trucks must travel relatively long distances between customers, the differential is usually 2 to 3 cents. On the other hand, in the North Atlantic territory, where customers are concentrated and dumps are larger, the margin is commonly 1½ to 2 cents.

The pressure on the posted dealer tank-wagon price is likely to be a local matter. In some sections the price reduction takes the form of a voluntary allowance; that is, the posted tank-wagon price remains the same, but a voluntary allowance is announced. In other areas a so-called local price reduction is made. These forms of price quotations tend to indicate that the supplier considers the reduction temporary or abnormal.

Retail Prices

There has frequently been comment on the uniformity of posted retail prices within an area But the extent of uniformity of posted prices must not be overstated. In any community there are a number of stations selling gasoline at openly announced prices lower than the posted prices of most stations. Trackside operators and dealers in local brands normally post prices 1½, 2, or 2½ cents below those of advertised brands. At such normal differentials no large portion of the gallonage goes to these lower-price stations, because they are usually inconveniently located for many customers at the time their tanks are nearly empty. On occasion, prices at trackside stations show even wider differentials below well-known brands. If these differentials persist for any length of time, substantial gallonage is diverted from the well-known brands, and retailers of these brands are forced to reduce prices.

Because the principal costs are fixed, costs per gallon are notably lower for stations with large gallonge. In view of this relationship of cost and gallonage, retail-station operators are prone to cut the posted retail price by secret discounts and concessions in order to reduce unit costs by increasing volume. With their great differences in unit costs, stations of different sizes could not be satisfied with any single-margin figure, or any single differential between the dealer tank-wagon prices and the retail prices.

Since suppliers could not cut prices below posted figures at their own stations without becoming embroiled in constant conflict with dealers charging bad faith, independent retail stations had a perfect setup for sharpshooting against company-owned stations, which were reluctant to retaliate in the same way. The companies, therefore, found their own stations badly handicapped in the competitive struggle.

As these difficulties became more pressing most of the integrated companies began to abandon

the effort to establish retail prices. This abandonment took the form of leasing company-owned stations to independent dealers, frequently the former salaried managers of the stations.

The shift to retailers of responsibility for the retail price was not made easily. Indeed, in many sections of the country a hectic period of readjustment began which has not yet fully run its course. Dealers in many territories rushed to form associations and establish prices which were to allow margins of 5, 5½, and even 6 cents. Prices which permitted these margins made possible a "field day" for the large-volume, efficient stations, and tempted many retailers to seek increased gallonage through concessions to favored customers. Despite all sorts of efforts, persuasion, blockades, and violence of various kinds, the dealers learned what their suppliers had learned earlier, that the effort to maintain margins at levels high enough to make profitable all retail stations, and more particularly the relatively small or inefficient stations, is bound to fail in a trade to which access is easy and in which large volume is accompanied by low unit costs.

In the country as a whole it is clear that most of the efforts of retail associations to maintain margins at extremely high levels have been abandoned, and margins commonly have settled back to the 3 to 4-cent level. At the present time local price wars, breaking out when suspicion spreads widely among retailers that competitors are extending secret concessions, push the margin level below 3 to 4 cents. When this happens dealers exert pressure on their suppliers for some relief. Dealers who operate in stations owned by their suppliers in some instances exert pressure for a reduction in rentals; and in other instances they press for a reduction in the tank-wagon price. Dealers not operating in company-owned stations normally concentrate their pressure on the tank-wagon price. Not infrequently some supplier who particularly feels the need to preserve a dealer organization accedes to the request and reduces tank-wagon prices locally. Other suppliers, if they are not to lose dealers, necessarily follow this lead; and the area becomes a subnormal market, as described in the discussion of the making of tank-wagon prices. Thus tank-wagon prices may come down because of pressure back from dealers suffering from a price war, as well as from recognition by suppliers that a competitor has been seeking to secure new dealer accounts by concessions in his tank-wagon price.

Price Leadership

A host of witnesses could be introduced to testify that it is far from universally true that the largest marketer in a territory now announces price changes first. Throughout the country from coast to coast there is no major marketing area in which all price changes are made by any so-called price leader.

But even if the largest marketer always announced a price change first, it would not follow that that concern "fixes" or "establishes" the price. To defend this proposition it is necessary to examine again the actual pricing procedure. Over the last 20 years the gasoline market has been a down-price market; that is, price reductions have been more frequent than price advances or they have been of longer duration or they have represented a greater change (for example, a 1-cent cut followed by a ½-cent advance at a later date).

If the number of local price cuts increases, if the number and amount of secret concessions to commercial consumers increase, if the secret unpublicized concessions to dealers increase, it becomes more and more difficult to maintain the higher prices. In other words, the so-called subnormal prices are becoming the normal prices. Finally some company, usually the largest marketer in the territory, recognizes that the subnormal price has become the normal price and announces a general price reduction throughout the territory. As in the local situation, all other suppliers meet the price reduction because they know business will flow to others if they do not.

The reverse situation, the price advance, is rarer because of the many forces working to reduce prices. Price advances may be either local increases which represent a reversal of a previous price reduction or a general price advance. Local price advances come about when dealers' struggles have spent themselves. The salesmen, therefore, constantly gage the attitude of dealers. All companies serving the particular territory are anxious to raise the price in the subnormal market, but the leading marketer in the territory is naturally most anxious to get the price up because the territory is more important to him than to the other companies. Under such conditions the industry generally will be eager for an advance but will be afraid to take the step before the leading marketer in the territory for fear of losing business. The leading marketer will also be anxious to go up but will also be afraid of losing business. In short, unless the so-called price leader accurately interprets basic conditions and local conditions, it soon will not be the leading marketer. Price leadership does not mean that the price leader can set prices to get the maximum profit and force the other marketers to conform.

Basing-Point Prices

The competition among all the suppliers operating in a territory, regardless of the location of their refineries and marketing facilities and regardless of their transportation methods, brings about substantial equality among their delivered prices. The refinery of each competitor who receives the delivered price is rarely located ideally with respect to all parts of the marketing territory. Thus, refinery net-backs or realizations, calculated by deducting from the destination prices the transportation and other costs after refining, are rarely absolutely identical for all delivery points. At some points in order to meet competition the supplier has to absorb some of the transportation and other costs. In some states, moreover, averaging of transportation cost or the absorption of some freight is virtually compelled by the laws which require state-wide uniformity of prices.

Delivered gasoline prices, markets for other petroleum products, transportation methods, competitors' locations, labor supply, the advantages of large-scale operations, and crude-oil supply are all factors in the problem of refinery location; and when all these factors are changing in a dynamic industry it is not surprising that two of the factors, delivered prices and transportation costs of gasoline, are not always perfectly in line.

Extent and Nature of Competition

Critics of the industry, conceding that there are a substantial number of large integrated companies (18 to 30, depending on the basis for classification), suggest that common policies and a live-and-let-live attitude characterize the operations of these numerous concerns. The fact is that many new companies, including Texas Corp., Gulf Refining, Phillips Petroleum, Sun Oil, Sinclair, and others, have steadily cut into the business of the companies created after the dissolution of the old Standard Oil Co.; and the testimony of the executives of the new companies is to the effect that their growth has been in the face of the fiercest kind of competition from the companies earlier in the field.

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Chairman Queries Swensrud

THE marketing spokesman for the A.P.I. group, Sidney A. Swensrud, vice president, Standard Oil Co. of Ohio, concluded his testimony immediately after the appearance of the Pennsylvania independent producer-refiners. He encountered stiff questioning from Senator O'Mahoney as to the elements entering into the price of gasoline. Committee counsel also questioned him concerning the acquisition of bulk stations with the inference that major companies acquired jobbers who had build up a reputation as being "price cutters." This was denied by the witness, who contended that in certain instances the companies had to take over such jobbers to protect credits they had outstanding with them. The witness interposed rebuttal against the allegations of the Pennsylvania independents and disclaimed there was any design in the devices used in dealing with retailers.

Senator O'Mahoney inferentially took the witness to task somewhat for continuing to maintain the impossibility of determining costs involved in refining a barrel of crude into the various petroleum products. "Is it your policy to sell gasoline for what you can get?" The witness agreed. "Do you charge what the traffic will bear?" "Yes," the witness said.

Discussion back and forth between Mr. Swensrud and Senator O'Mahoney developed the following breakdown of the elements entering into the cost of a gallon of gasoline: (1) Basic price of gasoline at refinery; (2) refinery marketing costs; (3) transportation costs; (4) wholesaling costs; (5) retailing expense; (6) taxes.

Questioned by Senator O'Mahoney the witness said price-cutting is practiced by independents against company stations and by company lessee-operators against company stations. "In fact, it is becoming less and less unusual for our dealers to sell under prices at company-operated stations." Mr. Swensrud observed there is "more and more variation in prices" of gasoline at retail outlets. "How will that affect you?" asked Senator O'Mahoney. "We are studying it now to see what's up and to determine what to do," he said. Mr. Swensrud added they were concerned over the price-cutting situation since if their dealers go broke they won't have any dealers. Leadership in making price cuts, the witness explained, was not always within the election of a company since it often resolved itself into a matter of necessity in order to continue to operate. Denial was entered, however, that the company counseled dealers to cut prices. Chairman O'Mahoney questioned the witness whether the objective of major companies was to maintain prices.

Answering a question asked earlier by Senator O'Mahoney and brought up again by Mr. Henderson of the S.E.C., Mr. Swensrud said his company does not use a resale price maintenance contract in its dealer relations. "We considered it and our company's opinion is that it is pretty hard to use law to enforce a retail price." The unworkability of resale price maintenance in their field was demonstrated by the failure of the Iowa plan.

(Other Testimony on Page 114)

International

East Indies . .

Increase of 750,000 Bbl. In Crude Production

AN increase of more than three-quarters of a million barrels in the second quarter crude-oil production from the Netherland East Indies to 15,333,877 bbl. for the 3 months, rounded out the half year last June ahead of 1938. Production for the first 6 months totaled 29,884,709 bbl., an increase of 1,972,934 bbl. over the same period in 1938. The most substantial portion of the 1939 gain was accounted for in the second quarter when production totaled 15,333,877 bbl., a gain of 783,045 bbl. over the first quarter and 1,142,681 bbl. ahead of the comparable 3 months in 1938.

With the exception of the Java-Madura fields all producing territories in the Netherland East Indies contributed to the second-quarter increase. The most substantial advance was registered by the Palembang district in Sumatra where production for 3 months climbed above the 6,000,000-bbl. mark for the first time in recent years. Less impressive but substantial increases were also registered by the fields in North Sumatra, Djambi, East Borneo, Tarakan and Ceram.

Details of the first 6 months' production follow:

Fields—	First quarter, 1938	First quarter, 1939	Second quarter, 1939
Java	1,969,221	1,594,890	1,511,210
N. Sumatra	1,727,989	1,771,697	1,909,211
Palembang	5,291,979	5,535,984	6,001,826
Djambi	1,840,636	2,215,689	2,307,406
E. Borneo	1,863,094	1,839,861	1,880,666
Tarakan	1,345,700	1,432,989	1,467,704
Ceram	152,577	159,722	255,854
Total	14,191,196	14,550,832	15,333,877

Germany . .

Crude Oil Production Increased This Year

GERMANY'S crude-oil production during the first 7 months of 1939 is reported by the American consul in Bremen to have totaled 3,031,029 bbl., compared with 2,281,167 bbl., during the corresponding period of 1938. The monthly production in 1939 averaged 433,000 bbl. (including Austria), against 326,000 bbl. per month in the first half of 1938, exclusive of Austria.

The increase in German oil production is due, the report sets out, to newly discovered fields and to the inclusion of the production in Austrian fields. The Hannover fields continue to be the most important producers of indigenous crude in Germany with the Nienhagen-Hanigsen area alone accounting for 1,322,783 bbl. of the first 6 months' grand total. German production in July totaled 480,963 bbl., compared with 381,717 bbl. that month in 1938. In the first 6 months of 1939, as compared with the same period in 1938, the total production in the Hannover fields decreased by approximately 14 per cent. Total German production (including Austrian fields with 79,023 bbl.) during June 1939, amounted to 452,907 bbl., against 475,097 bbl. during the preceding month (Austrian fields 67,662 bbl.) a decrease of approximately 5 per cent. Hannover fields alone accounted for 48 per cent of the total output in June 1939, compared to 81 per cent for the same month last year.

The comparatively substantial increase of nearly 11,500 bbl. in the monthly production this year from Austria is reflective of the Reich's insistence that private operating companies in that area increase exploration. All private operating companies in Austria received instructions shortly after Germany acquired Austrian territory to step up their development programs on a schedule consistent with the current production and with areas held for exploration and exploitation.

Details of production by months in barrels for the first half of this year, compared with 1938, in the Hannover district appear as follows:

	Nienhagen-Hanigsen	Wietze-Steinforde	Eddesse-Oberg
1939—			
January	184,184	25,760	7,231
February	175,553	23,485	6,370
March	197,211	25,487	7,651
April	193,948	23,583	7,630
May	196,238	24,752	9,373
June	179,557	25,102	9,968
Total	1,126,391	148,169	48,223
Grand total, 1,322,783.			
1938—			
January	208.436	25,039	11,410
February	190,533	23,513	7,392
March	252,483	25,592	11,956
April	244,629	24,584	10,500
May	217,756	25,522	10,493
June	205,499	25,137	11,515
Total	1,319,336	149,387	63,266
Grand total, 1,531,989.			

Liquid petroleum imports by Germany during the first 6 months of 1939 are reported by the Department of Commerce to have totaled 18,951,000, an increase of 4,693,000 bbl. from the figures issued on the first half of 1938.

The basis of the important statistics for petroleum products has been completely altered beginning with the current year making a direct comparison of the various products impossible, although the totals are doubtless reflective of the general import situation for the two periods.

The import figures for the first half of this year show that 5,440,000 bbl. of products came from the Netherland West Indies; 4,295,000 bbl. from the United States; 4,184,000 bbl. from Mexico and 3,020,000 bbl. from Rumania. According to these reports the large suppliers, other than Rumania, shipped a total of 13,919,000 bbl. of liquid petroleum products to Germany during the first 6 months of this year which was more than 73 per cent of all receipts. Because of war conditions 100 per cent of the first half's receipts from the United States, Netherland West Indies and Mexico have been stopped since hostilities started early in September. This means that exports averaging 23,729 bbl. per day from the United States shipped to Germany during the first half of this year are now thrown back upon the domestic market or moved to storage.

Total German petroleum imports reported for the first half of this year and 1938 follow:

(In U. S. barrels)

Products—	1938	1939
Crude oil	2,551,000	3,821,000
Gasoline	4,951,000	5,554,000
Kerosene	91,000	134,000
Gas oil and motor oil	4,395,000	5,884,000
Lubricating oil	1,294,000	1,225,000
Fuel oil	976,000	2,333,000
Total	14,258,000	18,951,000

Although the reported figures show a substantial increase for 1939, the gain is doubtless much greater than reflected by the table. The bunkering of outgoing ships alone would add materially to the fuel oil and lubricating oil totals

Mexico . .

Conferences Renewed On Oil Expropriation

RENEWAL of conferences in Washington on the Mexican expropriation question has so far left undisclosed the full significance of the conversations. Josephus Daniels, ambassador to Mexico, is in this country as is the Mexican envoy, Ambassador Najera. Patrick J. Hurley, former Secretary of War and now counsel for Consolidated Oil Corp., has been in conference with Secretary of State Cordell Hull over the Mexican situation, but the nature of conversations has not been disclosed. Stoppage of petroleum exports to Germany, partly because of the war and partly because of unsatisfactory payment for shipments previously dispatched, has placed a severe strain on Mexico's petroleum economy, bringing exports down to an estimated average of not more than 15,000 bbl. per day.

Mexico City has announced that barter arrangements with Italy have been renewed involving the exchange of petroleum for rayon, and, while details of the new convention have not been made public, it is understood that Italian channels will increase their procurement of Mexican petroleum. The increase to Italy, however, will be insufficient to absorb the surplus now backing up because of the discontinuance of trade with Germany. Efforts of Mexico to establish South American petroleum markets have been in the main unsuccessful.

The impression in this country that Mexico may be seeking a solution of the expropriation question is apparently discounted to some extent by the seizure early in September of two additional subsidiaries of Standard Oil Co. of New Jersey which were not involved in the March 18, 1938, decree. These companies are Compania Titania and Compania Mercedea, both in the Rio Bravo district. Neither had contracts with the labor syndicate which was the basis of the previous seizures.

Rumania . .

Production Declining Below 1938 Figure

RUMANIAN crude-oil production declined to 23,186,421 bbl. during the first 6 months of this year. This represents a decline of 1,714,042 bbl. compared to the same period in 1938. Production during the first half of this year is at a rate of about 46,376,000 bbl. which compares with actual yield in 1938 of 49,517,600 bbl.

The monthly output for 1939 has been consistently falling below the rate for the corresponding months in 1938 and there have been no developments in exploration effort to indicate a reversal of this downward trend. During the first 6 months of 1939 drilling in Rumania amounted to 128,957 m. compared with 161,890 m. in the corresponding 1938 period.

Refinery Expansion

Contracts for construction of Consumers' Cooperative Refineries, Ltd., were let in the presence of (seated) Dr. n. E. Nagel, vice president, Universal Oil Products Co., Chicago; W. W. McCreary, Canadian Brown Steel Tank Co., Brandon; O. B. Males, B.Sc., plant superintendent; E. E. Frisk, president, Consumers' Cooperative Refineries, Ltd.; H. L. Fowler, secretary-manager, Consumers' Cooperative Refineries, Ltd.; Dr. Sidney Born, Tulsa; N. W. Kerr, K.C., Brandon; G. H. Barr, K.C., Regina; (standing) W. H. Johnstone, director, Moose Jaw; C. O. Smith, director, Regina; George Burden, director, Moosomin; V. C. Thomas, director, Milestone

Work on New Regina Plant Will Start Soon

REGINA, Sask.—Construction of a new refinery here which will cost $250,000 has been announced by Consumers' Cooperative Refineries, Ltd. Work on the foundations will start soon. However, the major part of building the plant will be done next year and it is anticipated that it will commence operations about June 1, 1940. Capacity of the refinery will be 1,500 bbl. per day. The 500-bbl. plant now being operated by this organization at Regina will not be dismantled but will be used as standby facilities. The new plant is licensed by Universal Oil Products Co. to operate Dubbs cracking units. Dr. Sidney Born, Tulsa, has been in charge of plans. Contract for construction has been let to Canadian Brown Steel Tank Co., Brandon, Man.

W.P.R.A. Announces Feature Of El Dorado, Ark., Meeting

The regular monthly meeting of the technical group of the Ark-La-Tex Division of Western Petroleum Refiners Association will be held on Friday, October 13, at the Randolph Hotel, El Dorado, Ark., beginning at 4 p.m. The special feature of this meeting will be a paper entitled "Extreme Pressure Lubrication," by Arch L. Foster, of the Lubri-Zol Sales Co., Cleveland, Ohio.

He will deal particularly with hypoid lubricants, including the newer developments in this field, the trends in hypoid design which concern the lubricant supplier, trends in Detroit and the changing attitude of automotive manufacturers toward the so-called mild-type hypoid lubricant. The usual open-forum discussion will follow the reading of this paper, and, in the light of past experiences when similar subjects have been presented before Ark-La-Tex refiners, the discussion is expected to be lively and interesting.

Direct Appeal for Decision in Ethyl Gasoline Suit Allowed

NEW YORK, Oct. 10.—Permission has been granted for direct appeal of the Ethyl Gasoline Corp. anti-trust suit direct to the Supreme Court. Federal District Judge William Bondy ruled several months ago that the corporation's contracts prohibiting refinery licensees from selling treated gasoline only to jobbers holding licenses was in restraint of trade. Judge Bondy's granting of a direct appeal will circumvent the intermediate step in the Circuit Court and may hasten a decision on the question.

$1,500,000 to Be Spent by Cont'nental at Ponca City

PONCA CITY, Okla.—Continental Oil Co. will spend $1,500,000 on a building program to improve quality and to increase the gasoline-manufacturing capacity at its Ponca City refinery, it was announced here by Pres. Dan Moran.

Construction is scheduled to start about November 1, and the project should be completed next June.

A contract for installation of one of the most modern thermal gasoline-cracking processes yet developed has already been awarded to the M. W. Kellogg Co., New York. This contract involves approximately $1,250,000, and Continental will spend an additional $250,000 in revisions of equipment and rearrangement of the steam system, and in remodeling pumping units and electrical systems.

"In announcing this project, we should like to point out that there is ample labor now available in Ponca City to handle the work," said Mr. Moran. "Previously when we have announced large building programs there has been an influx of men whom we could not employ. This time we don't want to disappoint them, as we already have plenty of both skilled and common labor to complete this project."

Approximately 200 men will be employed in the construction project, the largest refinery-building program undertaken in the Mid-Continent area in several years.

Improvements at Baton Rouge Plant Will Cost $3,000,000

BATON ROUGE, La.—The Standard Oil Co. of Louisiana, a subsidiary of the Standard of New Jersey, has launched further an extensive program to improve its Baton Rouge refinery at a cost of around $3,000,000. So far it has spent around $15,000,000 for betterments in the last 5 years.

Progress Reported in Building Illinois Plants

Lake Refinery Co. is completing a 2,000-bbl. skimming plant, southwest of Salem, Ill., on the Missouri-Illinois highway. Cascade Refining Co.'s 2,000-bbl.-per-day plant ½ mile north and a mile east of Selmaville, in the Salem area, is operating.

Central Illinois Oil & Refining Co. at Central City is rushing work so that operation can be commenced in the middle of October.

National Lubricating Grease Institute Election

CHICAGO.—National Lubricating Grease Institute, holding its seventh annual meeting at the Stevens Hotel, elected the following officers and directors:

E. V. Moncrieff, Swan-Finch Oil Corp., president and treasurer; F. C. Kerns, Texas Co., vice president; G. W. Miller, executive secretary.

Directors: M. R. Bower, Standard Oil Co. of Ohio; J. R. Battenfeld, Battenfeld Grease & Oil Corp., Kansas City, Mo.; W. E. Callaghan, Motor State Oil & Grease Co.; M. B. Chittick, Pure Oil Co.; J. R. Corbett, Cato Oil & Grease Co., Oklahoma City, Okla.; C. B. Karns, Penola, Inc.; F. C. Kerns; L. P. Lochridge, Consolidated Oil Corp.;

Natural-Gas News

W. J. Locke President of Pennsylvania Gas Co.

W. J. Locke, of Oil City, Pa., vice president of United Natural Gas Co., has been elected president of the Pennsylvania Gas Co. and Pennsylvania Oil Co., succeeding B. H. McLachlan, who died recently.

United has named A. C. Burwell, vice president in charge of engineering, and James E. Montgomery, Jr., vice president in charge of production and geology. Mr. Burwell has been chief engineer and Mr. Montgomery, native of Kane, Pa., has been chief geologist and superintendent of production.

Hearing on Rate Increase Set for December 12

WASHINGTON, D. C.—The Federal Power Commission has set December 12 for a hearing to determine the lawfulness of a proposed increase in rates January 1, 1940, for natural gas sold to Illinois Iowa Power Co. by Mississippi River Fuel Corp. for resale. Pending decision of the commission, the proposed increase has been suspended for 5 months from January 1. The commission has extended until December 31 temporary orders authorizing six gas companies to export natural gas: United Gas Pipeline Co., United Gas Corp., El Paso Natural Gas Co., Texas Cities Gas Co., Texas Gas Utilities Co., and Iroquois Gas Corp.

Power Commission Orders Joint Hearing Held

WASHINGTON, D. C.—The Federal Power Commission has ordered consolidation of four proceedings involving Hope Natural Gas Co. for the purposes of a joint hearing to determine whether the rates charged for natural gas sold by the company at wholesale for resale are unjust, unreasonable, unduly discriminatory or preferential. Hearing was set for December 4.

The four proceedings involved are: Complaints of the cities of Cleveland and Akron regarding gas sold to East Ohio Co., an affiliate; complaint of the Pennsylvania Public Utilities Commission regarding gas sold to Peoples Natural Gas Co., Fayette Gas Co., and Manufacturers Light & Heat Co.; and the commission's own investigation of the company's rates.

William H. Oldacre, D. A. Stuart Oil Co.; R. H. Patch, E. F. Houghton & Co.; William H. Saunders, Jr., International Lubricant Corp.; Sydney Bevin, Fiske Brothers Refining Co.; B. C. Voshell; and G. S. Lincoln.

American Oil Chemists Hear Dr. B. H. Lincoln

CHICAGO.—The use by the petroleum industry of agricultural products to improve the lubricating qualities of oils and greases was discussed by Dr. B. H. Lincoln, chief chemist of Continental Oil Co., in a statement that manufacturers are now using about $22,000,000 worth of animal and vegetable fats and oils, largely of agricultural origin, in the production of lubricants.

Speaking before the American Oil Chemists Society at the Hotel Stevens, Doctor Lincoln named lard and tallow and corn, cottonseed, linseed, rapeseed and soya bean oils as some of the farm products that go into lubricants or provide additional agents used in varying amounts in automobile and industrial oils and greases.

The animal and vegetable oils and fats were said to improve the wetting ability or "oiliness" of straight mineral oils, the consistency and other requirements of greases and the load-carrying capacity and resistance to oxidation and corrosion of both oils and greases. The use by the petroleum industry of fatty materials of farm origin is expanding yearly, Doctor Lincoln said.

Natural Gasoline

Shell Starts Work on $600,000 Plant in Magnolia Field

ST. LOUIS, Mo.—Shell Oil Co., Inc., has announced construction had begun on a new natural gasoline extraction plant in the Magnolia field of Columbia County, Arkansas.

The plant, with daily intake capacity of 13,000,000 cu. ft. of gas, will be owned jointly by Shell, Atlantic Refining Co. and others. Shell is in charge of construction and will operate the plant upon completion. It was estimated daily production would be 50,000 gal.

Contracts for construction and materials totaling more than $600,000 have been awarded.

The contract for construction of the plant proper went to the Gasoline Plant Construction Corp. of Houston, Tex., on its bid of $460,000. Compressor equipment will be supplied by Ingersoll-Rand & Co. of Phillipsburg, N. J.

The company estimated an additional $143,000 would be spent for labor and materials for the pipe-line gathering and residue system. Loading lines will be laid to the town of Magnolia, where loading facilities will be maintained.

The lines will be laid by the Latex Construction Co. of Houston, Tex., and the pipe will be furnished by the American Rolling Mill Co., Middletown, Ohio, and the Allegheny Ludlum Steel Co. and Spang Chalfant & Co., both of Pittsburgh, Pa.

A $15,000 contract for construction of a camp was let to J. L. Peake of Dallas, Tex.

Delivery of pipe is scheduled for November 1, and in the meantime work is proceeding on the camp and plant site.

More than 100 men will be employed in construction of the gas plant, and it is expected total employment on the project will reach a peak of 150 to 175 men.

The Magnolia plant is the second gasoline extraction unit announced for construction this year by the Shell organization, work already being under way on the first, in the Wasson field, Texas. Both plants will embody the most recent developments in engineering design.

Knox Starts New Plant Near Graham, Tex.

Knox Refining Co., Enid, Okla., has started the construction of a gasoline plant in the Knox pool, 8 miles northeast of Graham, Tex.

Pipe-Line Activity

Robert C. Tuttle President of Keystone and Buffalo

PHILADELPHIA, Pa.—At meetings of the boards of directors of Keystone Pipe Line Co. and Buffalo Pipe Line Corp., Robert C. Tuttle, vice president and director of Atlantic Refining Co., was elected president of the two pipe-line companies. Both are subsidiaries of Atlantic.

Mr. Tuttle entered the employ of Atlantic at 17 as a stenographer. He was elected a vice president in 1931 after serving as assistant manager and manager of the marine department.

Laying 10-Mile Line To Bisteneau Field

SHREVEPORT, La.—Arkansas Louisiana Gas Co. is laying a 10-mile 14-in. feeder line from the Bisteneau field of Bienville Parish, Louisiana, to its trunk line near the Dubberly field.

Hobart Field Outlet

The new Hobart field of Kiowa County, western Oklahoma, now has another outlet with the Black Gold Refining Co. of Oklahoma City getting the crude by tank cars from Hobart, through a deal with Hobart Refining Co.

Major South American Pipe Lines Start Deliveries to Tankers

The first shipments of oil have been announced from the marine terminals of the two major pipe-line projects completed this year in South America. Crude was shipped by tanker on September 28 from Guanta, Venezuela, by the Mene Grande Oil Co. This oil had been delivered from the high-gravity Oficina field and intermediate production spots through a 100-mile 16-in. pipe line completed early in July. Crude oil has been moving through the line at the rate of 15,000 bbl. per day during the month of September; during this time, 450,000 bbl. had been accumulated in tankage at the seacoast where it was available for ocean-going tankers; oil in storage in the Oficina field is almost equivalent to that stored at the port. The capacity of the line is 100,000 bbl. per day. At the end of September the first runs were made through the 265-mile 12-in. line from the Barco concession, Colombia, to the coast. This line has been built by South American Gulf Oil Co. which is owned by Texas Corp. and Socony-Vacuum Oil Co. The first tanker shipment is to be loaded in the middle of October.

Continental Buys Pipe Line in Texas

PONCA CITY, Okla., Oct. 10.—Continental Oil Co. announced today it had purchased the Crude Oil Pipe Line Co. of Texas and related companies. Properties involved in the deal included 225 miles of pipe line and a 500,000-bbl. deep-water terminal at Corpus Christi.

Allowable Raised in Texas Panhandle

AUSTIN, Tex., Oct. 10.—Jerry Sadler, member of the Railroad Commission, announced he and Lon A. Smith, chairman, would sign an order increasing by 13,000 bbl. a day to 60,000 bbl. the allowable for the Panhandle district.

A.S.T.M. Recommends Changes In Fuel-Oil Standards

The standing committee for fuel oils has approved certain changes in the commercial standard for fuel oils. These changes are in agreement with a recent revision adopted by the American Society for Testing Materials and issued under the designation, D 396-39T.

The changes recommended are as follows:

Pour point of No. 1 oil from 15 to 0° F. Pour point of No. 2 oil from 15 to 10° F. Maximum viscosity of No. 3 oil from 55 to 45 seconds S.U. at 100° F. Minimum viscosity of No. 5 oil from 60 to 50 seconds S.U. at 100° F.

These changes improve the characteristics from the viewpoint of the consumer.

Laying pipe line through Devil's Canyon, near Morgan, Utah. This is a 47.4-mile contract on a 432-mile line between Laramie, Wyo., and Salt Lake City. In some places here pipe is carried across creeks 4 ft. deep

PROGRAMS AND MEETINGS

Congressman Cole to Speak At I.P.A.A. Banquet

Representative William P. Cole, Jr., chairman of the subcommittee of the House committee on interstate and foreign commerce which will conduct hearings on the proposed bill to apply federal regulation to the petroleum industry, will be the speaker at the banquet of the Independent Petroleum Association of America in Fort Worth Friday night, October 20. The occasion is the tenth annual convention of I.P.A.A., October 18, 19 and 20. The program follows:

Thursday Morning, October 19

Opening session, Venetian ballroom, Blackstone Hotel. J. E. Farrell, chairman, general arrangements committee, presiding.

Address of welcome, Amon G. Carter, Fort Worth.

Order of business, D. H. Bolin, chairman.

President's annual address, Charles F. Roeser, president, I.P.A.A.

"Oil Tax Problems in the Next Congress," W. A. Delaney, chairman, tax policy committee, Ada, Okla.

Report of Committee on Elimination of Illegal Production, John Kilgore, chairman, Wichita Falls, Tex.

Address, Russell B. Brown, general counsel, I.P.A.A.

Address, "Next Steps in I.P.A.A. Public Relations," Burdette Blue, chairman, public relations committee; president, Indian Territory Illuminating Oil Co., Bartlesville, Okla.

Address, "The Stake of the Royalty Owner in Oil Legislation," James Hailey, chairman, royalty owners committee; president, National Association of Petroleum Investors, Tulsa.

Proposed Revision in Constitution and Bylaws, Curtis F. Bryan, chairman, constitution and bylaws committee; president, Bryan Petroleum Co., Tulsa.

"Unnecessary and Unprofitable Drilling," Edwin B. Hopkins, chairman, subcommittee on unnecessary and unprofitable drilling; vice president, American-Maracaibo Co., Dallas, Tex.

Report of Committee on Balance of Supply With Demand, H. B. Fell, chairman; executive vice president, I.P.A.A., Ardmore, Okla.

Thursday Afternoon, October 19

Oil men's luncheon, Texas Hotel.

Address, "Regulation of Production by States," Leon C. Phillips, governor of Oklahoma.

General session, Venetian ballroom, Blackstone Hotel.

Address, H. B. Fell, executive vice president, I.P.A.A., Ardmore, Okla.

Address, "How Increase Use of Domestic Asphalt," T. M. Martin, vice president, Lion Oil Refining Co., El Dorado, Ark.

Discussion, "Federal Conservation Act of 1939—H.R. 7372." Discussion leaders, Don Emery, vice president and general counsel, Phillips Petroleum Co., Bartlesville, Okla.; George A. Hill, Jr., president, Houston Oil Co. of Texas, Houston, Tex.

Barbecue at Ed Landreth's camp, Eagle Nest Lake—guests of Landreth Production Corp.

Friday, October 20

General sessions.

The I.P.A.A. Program for 1939-40 as presented by the joint meeting of the Special Study Committee of Thirty-Six and the Resolutions Committee; Wirt Franklin, chairman; past president, I.P.A.A., Ardmore, Okla.

Election of directors and state vice presidents.

Report of nominating committeee, J. S. Bridwell, chairman, Bridwell Oil Co., Wichita Falls, Tex.

Friday Afternoon, October 20

Luncheon, Venetian ballroom, Blackstone Hotel.

Presentation of winner of Grand Award, I.P.A.A. essay contest. Response, Miss Pauline Rae Huddleston, Oklahoma City, Okla.

Address, Senator Clint Small, Amarillo, Tex.

Report of membership committee, Ralph T. Zook, chairman; president, Sloan & Zook Co., Bradford, Pa.

Report of Budget and Finance Committee, N. T. Gilbert chairman, general manager; Midstates Oil Corp., Tulsa.

Annual oil men's banquet.

Address, "Oil From the Standpoint of National Legislation," Congressman William P. Cole, Jr., of Maryland, chairman, special subcommittee on petroleum investigation.

American Section of Society Of Chemical Industry

The American Section of the Society of Chemical Industry has planned the following meeting schedule.

November 10, 1939, Chemical Industry Medal award to Dr. Robert E. Wilson, president of Pan American Petroleum & Transport Co. Joint meeting with American Chemical Society, New York Section.

December 8, joint meeting with American Chemical Society, New York Section.

Petroleum Electric Power Association Meeting

The Petroleum Electric Power Association will hold their eleventh annual conference on Thursday and Friday, December 14 and 15, 1939, at the Texas State Hotel in Houston, Tex. Many prominent men from the oil and electric industries have accepted assignments on the program for the 2-day session.

Houston Geological Society

HOUSTON, Tex.—At a meeting of the Houston Geological Society Thursday, October 5, the following officers were elected to serve for the ensuing year: Wallace C. Thompson, General Crude Oil Co., president; Carleton D. Speed, Jr., Speed Oil Co., vice president; Olin G. Bell, Humble Oil & Refining Co., secretary, and A. P. Allison, Sun Oil Co., treasurer.

An advisory committee composed of Roy L. Beckelhymer, Union Producing Co.; R. J. Metcalf, Ohio Oil Co., and F. W. Rolshausen, Humble Oil & Refining Co., was selected.

CALENDAR OF EVENTS

October

NATIONAL TAX CONFERENCE, Palace Hotel, San Francisco, Calif., October 16.

SOCIETY OF AUTOMOTIVE ENGINEERS, annual dinner, Hotel Pennsylvania, New York, October 16.

NATIONAL SAFETY CONGRESS AND EXPOSITION, Petroleum Section, Ambassador Hotel, Atlantic City, N. J., October 16-20.

COLORADO PETROLEUM INDUSTRIES COMMITTEE, annual convention, Shirley-Savoy Hotel, Denver, Colo., October 17.

NATIONAL STRIPPER WELL ASSOCIATION, annual meeting, Fort Worth, Tex., Blackstone Hotel, October 17.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, tenth annual meeting, Fort Worth, Tex., October 18-20.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Los Angeles, Calif., October 19-20.

WEST VIRGINIA PETROLEUM ASSOCIATION, Hotel Daniel Boone, Charleston, W. Va., October 26.

WESTERN PETROLEUM REFINERS ASSOCIATION, regional technical meeting, Washington-Youree Hotel, Shreveport, La., October 27.

November

SOCIETY OF AUTOMOTIVE ENGINEERS, fuels and lubricants meeting, Mayo Hotel, Tulsa, November 2-3.

AMERICAN PETROLEUM INSTITUTE, Division of Production, Illinois basin chapter, Masonic Temple, Salem, Ill., November 3.

NATIONAL MOTOR TRUCK SHOW, Navy pier, Chicago, November 8-16.

AMERICAN PETROLEUM INSTITUTE, twentieth annual meeting, Stevens Hotel, Chicago, November 13-17.

TWENTY-FIVE-YEAR CLUB OF PETROLEUM INDUSTRY, first annual meeting and dinner, Stevens Hotel, Chicago, November 14.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, Providence, R. I. November 15-17.

CALIFORNIA NATURAL GASOLINE ASSOCIATION, annual fall meeting, Los Angeles, Calif., November 17.

December

WEST CENTRAL TEXAS OIL AND GAS ASSOCIATION, Abilene, Tex., December.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Philadelphia, Pa., December 4-7.

PETROLEUM ELECTRIC POWER ASSOCIATION, eleventh annual conference, Texas State Hotel, Houston, Tex., December 14-15.

January 1940

SOCIETY OF AUTOMOTIVE ENGINEERS, annual meeting, Book-Cadillac Hotel, Detroit, Mich., January 15-19.

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, New York, February 12-15.

April

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-fifth annual meeting, Stevens Hotel, Chicago, April 10-12.

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, Columbus, Ohio, April 11-12.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Cleveland Hotel, Cleveland, Ohio, April 18-19.

May

NATURAL GASOLINE ASSOCIATION OF AMERICA, annual convention, Hotel Tulsa, Tulsa, May 15-17.

INTERNATIONAL PETROLEUM EXPOSITION, Tulsa, May 18-25.

The hydraulic engineer has been given the problem recently of getting oil into tankers at a faster rate. The problem involves many factors such as the viscosity of the oil, possibility of generating static charges, relative pump sizes and pressures, corrosiveness of the oil, etc., but all of these are resolved into rather simple relationships provided there is a strong and ample link to connect the terminal facilities with the tanker. This job falls to specially constructed rubber hose.

ENGINEERING & OPERATING

OCTOBER 12, 1939

Testing and Sampling M
Used on Condensate W

View of the enlarged recycling plant of the Tide Water Oil Co. and Seaboard Oil Co. at Cayuga, Tex. This plant operates at high pressures and low temperatures

By GEORGE WEBER

This article is the second in a series which will thoroughly cover the subject of gas-condensate plants and the recycling of high-pressure gas. The series is the result of intensive study and investigation of this important problem

A THOROUGH study of reservoir conditions and condensate recovery is the first step in investigating recycling possibilities of high-pressure gas reserves. With the growing interest in recycling, the procedure for testing, sampling and reproducing reservoir temperatures and pressures at the surface has become a specialized work.

The lack of sufficient data on the behavior of gas in the retrograde-pressure range prevents accurate calculation of plant-operating conditions and expected yields as is possible at lower pressures where simple gas laws apply. Until the time when enough is known of the behavior of gas at higher pressures to support accurate computation, the basic data on recycling operations must be obtained from actual well and laboratory tests.

The large investment in recycling-plant equipment based on the findings of such tests places considerable importance on them. As a result, improvements in procedure and added steps in testing are rapidly developing.

Recoveries and Temperatures

The two basic relations in condensate production from high-pressure gas wells are the recoveries of liquid at varied separator pressures and temperatures. Condensate accumulation is noted for separator runs made over a wide range of pressure and temperature, and the recovery is plotted at constant temperature against pressure, and cross-plotted at constant pressure against temperature to form the fundamental curves for the well's characteristics.

In addition, high and low-pressure-staged recovery is investigated and the effects of flash and differential vaporization of the condensate to atmospheric or storage pressure is noted. The effect of the chosen testing conditions on gravity, solubility, shrinkage, and Engler distillation curves of the recovered liquid are studied, as well as the gravity, natural-gasoline content and supercompressibility of the separated gas.

These data comprise an index of a field's recycling possibilities and in cases where such projects are feasible, indicate the optimum operating conditions providing greatest yield in relation to plant investment and operating costs.

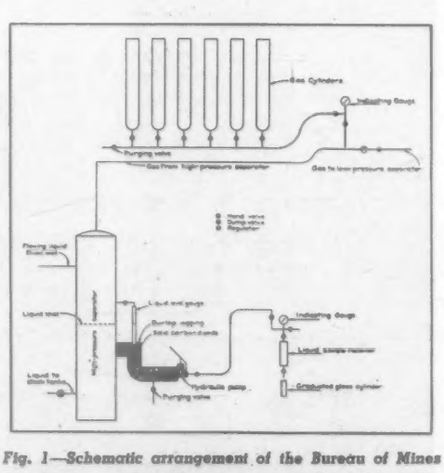


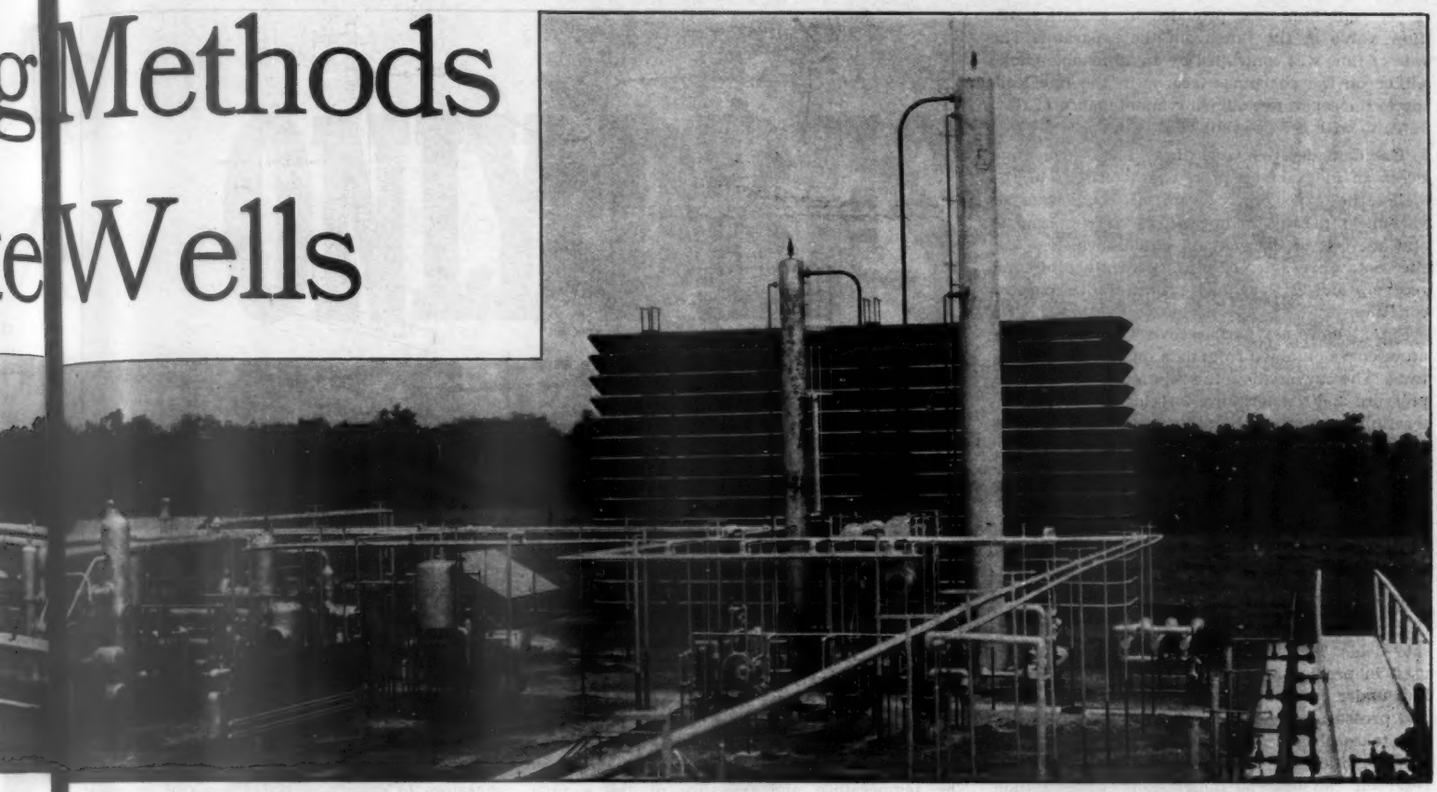
Fig. 1—Schematic arrangement of the Bureau of Mines apparatus used in taking gas and condensate samples from a high-pressure separator

Sampling and Phase Study

Representative sampling of gas and liquid and reproduction of original pressure and temperature give an insight into the phase conditions existing in the reservoir, revealing the relation between reservoir pressure and dew point of the gas. In most gas-condensate fields, where one gas phase exists in the sand, the original reservoir pressure is equivalent or close to the dew point for the phase. However, in some instances the dew point is lower than the original pressure. In such cases it can be expected that no oil occurs downstructure in the same continuous sand. Knowledge of this condition is also valuable in planning recycling operations, for with an allowable outlet for gas from the wells, recycling may be postponed until the dew point is approached, possibly resulting in delayed investment and lower compression ratios after recycling has begun. Well-flowing tests over a long period may indicate the presence of an active water drive, which at reduced rate of gas withdrawal maintains the reservoir pressure at the original figure. This, dependent again on an allowable outlet for gas, would provide for extraction of the condensate without loss of condensation in the reservoir, if careful tests are continued to assure maintenance of the reservoir pressure. A great majority of cases will find the two above conditions absent in high-pressure fields, but their discovery by adequate testing methods will repay operators for the time and investment.

As is typical of investigations in new technique, the scope of tests on gas-condensate wells ranges from simple separation of gas and liquid at the well to elaborate pilot plants which duplicate actual recycling operations. Methods of sampling also vary according to opinions of the relative merits of flow stream and separator sampling. The testing methods of a few control bodies and testing services have come to the front in the recent devel-

Methods Wells



opment, and their methods comprise sufficiently representative examples of procedure to indicate the trend in testing and sampling technique.

Bureau of Mines Tests

The U. S. Bureau of Mines was one of the first agencies to study the flow characteristics of gas-condensate wells, and to sample production for laboratory analysis. In their preliminary field tests, bureau engineers used two separators for flow studies of a gas-condensate well in East Texas.[1] Fluid was produced from casing and tubing in four flow tests and two-stage separation, and running records were kept on first and second-stage separator pressures and temperatures, temperatures at well head and subsurface points, pressures on tubing and casing, rates of gas and condensate recovery, and gas-liquid ratios. Gradient-pressure surveys were made on the well to a total depth of 7,500 ft. during flow through tubing and casing, and following shut-in periods of 26 and 26½ hours.

The data, plotted graphically, showed flowing characteristics of the well during the test runs, and the pressure gradient in the well, the latter revealing presence of liquid in the well bore under certain conditions. These preliminary tests have formed a basis for procedure in later tests by bureau engineers and other investigators.

In carrying out surface sampling of condensate and gas, an ideal flow rate was determined from previous tests, with the high-pressure separator temperature maintained below atmospheric temperature to prevent condensation in the gas samples in the storage cylinders. The flow rate chosen showed a variation in gas-liquid ratio of only 0.09 per cent in 74 hours.

The apparatus for obtaining accurate samples is shown schematically in Fig. 1. Inverted 50-l. cylinders were connected to the gas line from the high-pressure separator. The condensate from the separator was withdrawn in a refrigerated line, and forced into the 2-l. sample receiver by a hydraulic pump, displacing mercury in the sampler. When 1 l. of liquid had been forced into the vessel the upper valve was closed and the lower valve cracked to remove the remaining mercury and relieve the pressure. The gas cylinders were purged and filled simultaneously until they were at full separator pressure. Before disconnecting them one cylinder was purged to prove the absence of any condensate.

For determination of the phase conditions existing in the reservoir, common procedure is to recombine the liquid and gas in the same proportion as the ratio during flow at identical, constant pressure and temperature, and to subject the mixture to reservoir pressure and temperature, noting the presence of one or two phases. Instead,

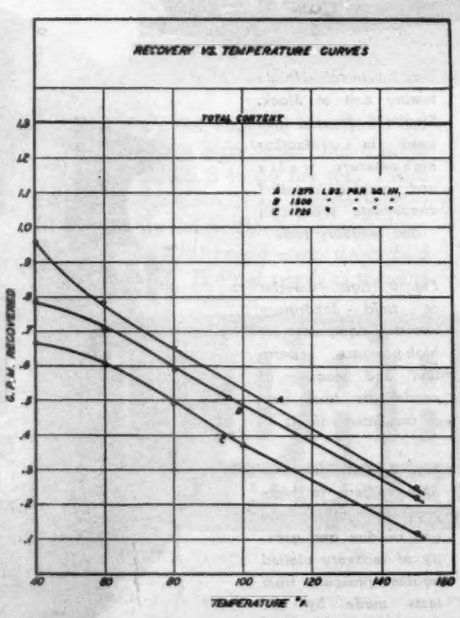


Fig. 2—Recovery versus temperature curves plotted from data obtained by the Texas Railroad Commission on a gas-condensate well

the preliminary studies of the bureau dealt with the isolated liquid sample; phase conditions being determined in the reservoir by means of expanding the liquid isothermally from pressures higher than reservoir pressure, and studying the saturation pressure of the sample. Further laboratory investigation included specific volume measurement, fractionation of both liquid and gas samples and differential liberation tests.

Texas Railroad Commission Tests

Testing methods more objective to recycling studies have been carried out by engineers of the Texas Railroad Commission under the direction of F. V. L. Patten. Experiments conducted on three gas-condensate fields in the state formed the basis for testing methods employed by that body. Two objects of the commission tests are to determine the feasibility of recycling operations, and to predict whether or not the gas-condensate production of a well is in a gaseous phase in the reservoir.

High-pressure separation at relatively high rates of flow is employed in this type of well test. The method provides accurate ratio determinations, and allows experimenters to obtain samples of sufficient size for analysis.

Three-thousand-pound test separators especially designed for gas-condensate separation were used in the tests. The flow rate at which the separators operated at almost 100 per cent efficiency was chosen for tests. The maximum temperatures obtainable were controlled by the well-head temperature, the pressure drop to the separator and the length of the line from well to separator. A flexible control of lower temperatures was provided by admitting expanded residue gas to a jacket surrounding the high-pressure line from well head to separator. This allowed minimum working temperatures of 0°F. in the separator.

The liquid condensate was measured at storage pressure, and the gas volume was determined by high-pressure orifice metering, applying corrections for static pressure, temperature and gas-law deviations. Control of separator pressure within a

1 per cent limit was provided by an adjustable flow valve in the line from the separator. The rate of flow was controlled by an adjustable choke either on the christmas tree or in the line leading to the separator, allowing maintenance of flow rates to within 4 per cent of chosen rate.

The data derived from these tests gave engineers an index of the flow characteristics of the wells, the expected recovery of condensate at varying separator temperatures and pressures, and analysis of the gas and liquid furnished further data on gravity of yield, percentage of total recovery and Engler curves at different separator conditions.

Fig. 2 shows a typical recovery versus temperature curve obtained from data on such separation tests. The curves show the relation of recovery to pressure and temperature, forming a basis for determining optimum operating conditions for recycling. Fig. 3 illustrates the relative condensate content in the liquid and gas phases of another typical well at the separator over a range of operating pressures.

Equilibrium Test Bomb

The problem of classifying wells as either gas wells or oil wells largely prompted the Railroad Commission's test work in high-pressure condensate fields. The separator tests described may be used in predicting the state of the well production under reservoir conditions. The temperature and pressure ranges through which such separation takes place, however, do not extend to reservoir conditions, and the phase relationship in the reservoir can only be indicated by extrapolation of curves to reservoir temperatures and pressures.

For accurate examination of condensate-well production under reservoir conditions, the commission employs a high-pressure equilibrium bomb as shown in Fig. 4. Samples are taken from the well head. In addition to the data found in separation tests described above, the condensate content of the gas at well-head pressure and temperature, the condensate content and amount of gas which is released from 1 cc. of liquid when flashed from well head to atmospheric pressure are determined. The temperature and pressure of the sample which will bring it to reservoir pressure when heated to reservoir temperature, and the volume of gas at normal pressure and temperature which the bomb contains at reservoir pressure and temperature are also calculated. These data allow the operators to determine the volume of sample at well-head conditions which will give a sample representative of the gas and liquid in the flow stream.

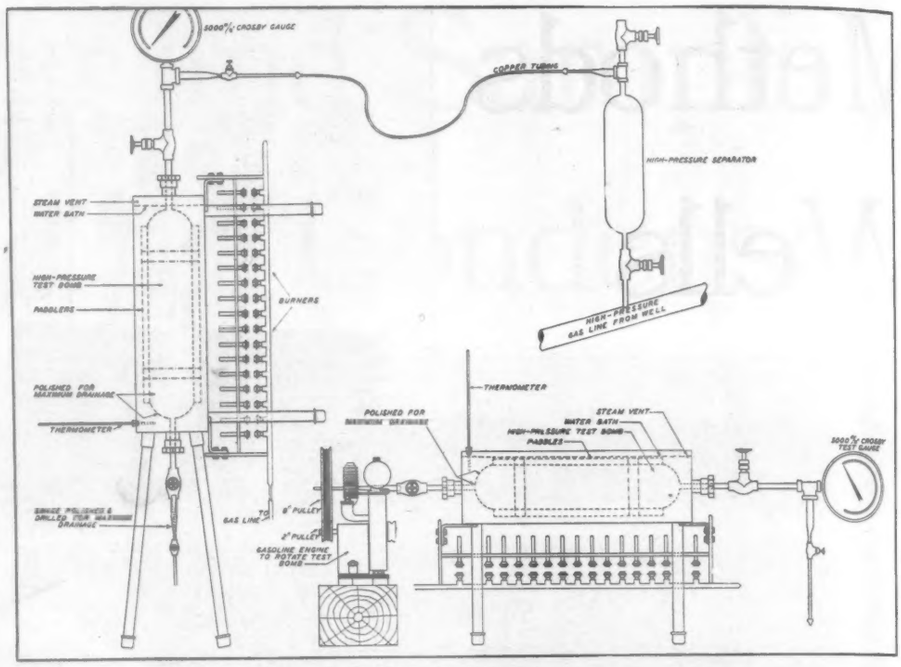


Fig. 4—High-pressure equilibrium bomb used by the Texas Railroad Commission in making accurate phase studies of gas-condensate well production

In cases when reservoir conditions could not be duplicated by heating the sample, the bomb was cooled and a small high-pressure separator as shown in Fig. 4 was installed between well head and bomb, and an additional fraction of gas was admitted.

When the bomb is charged with the correct quantity of sample at determined pressure and temperature conditions it is sealed and rotated in the water bath in a horizontal position for 2 or

Fig. 5 (above)—Mobile testing unit of Black, Sivalls & Bryson, Inc., used in evaluating high-pressure wells and making detailed condensate separation and recovery tests

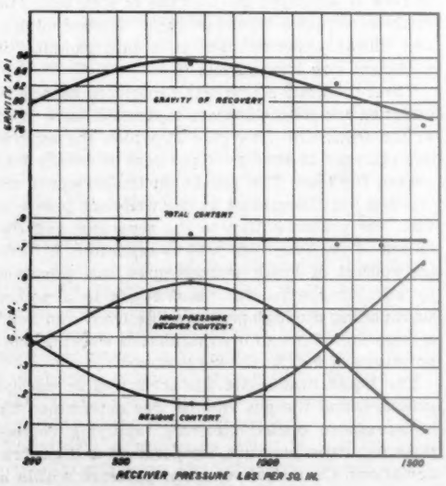


Fig. 3 (left)—Recoverable content in high-pressure receiver and gas residue and gravity of recovery plotted against pressure from tests made by the Texas Railroad Commission on a typical gas-condensate well

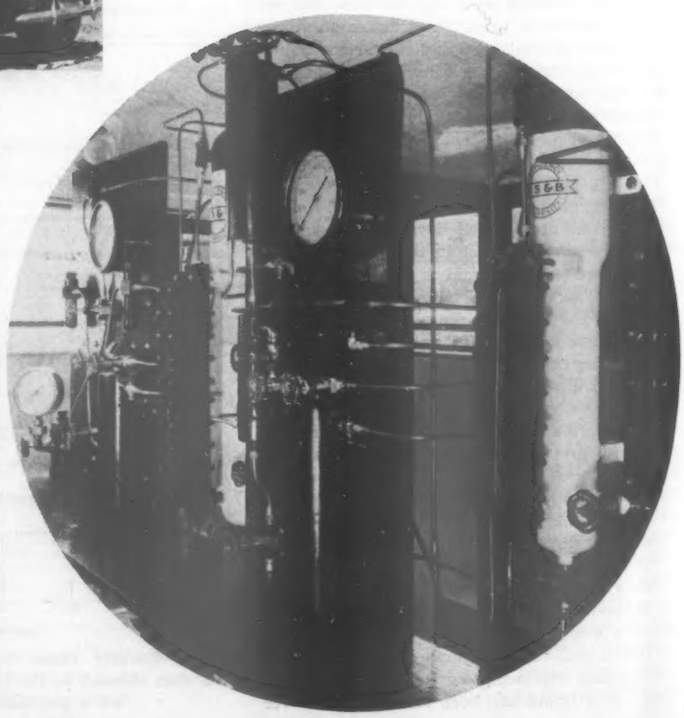


Fig. 6 (right)—Interior of field laboratory showing equipment for high-pressure separation and staging of condensate from gas-condensate fields

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more hours to obtain equilibrium. The bomb is then placed in a vertical position and the sample withdrawn through the calibrated nipple and flashed to atmospheric pressure into a separator from which continuous gas and liquid measurements are made. An immediate increase in the gas-liquid ratio marks the withdrawal of the last of the liquid when present in the bomb. At that point, the volume of the liquid phase at reservoir conditions is calculated from the volumes of liquid in the atmospheric separator and flashed gas withdrawn. This corrected volume, deducted from the total volume of the calibrated bomb, gives the

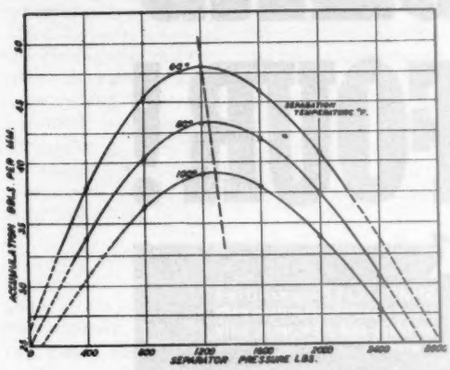

Fig. 7—The effect of separation pressure and temperature on accumulated liquid from a typical gas-condensate well

relative quantities of liquid and gas at reservoir conditions.

When the lighter liquid hydrocarbons from a gas-condensate well are present in relatively low concentrations, a second method of sampling may be used with accuracy. This consists of recombining the liquid and gas phases from the separator in the same ratio in which they occur during flow tests.

The measured liquid from the separator is introduced into the bomb. To obtain the gas sample the well is allowed to flow until the temperature of the flow line behind the choke is considerably below that of the gas from the separator. The well is then shut in and the flow line bled down to separator pressure. When the temperature of the flow line rises to separator temperature, the well is reopened and the gas thus collected is compressed and introduced to the bomb in the correct proportion. Specific gravity tests are used to prove that the gas sample is of the same composition as the gas from the separator. This recombination method has generally given place to direct sampling of gas and liquid in the flow line ahead of the choke.

The results of these tests show accurately the reservoir phase conditions and indicate the condensate recovery at variable separator conditions. The accuracy requires considerable calculation and time in making tests, however, and sufficient data for evaluating the recycling possibilities of gas-condensate wells may be obtained with shorter, less accurate methods.

Continuous Sampling

E. O. Buck and A. S. Parker, consulting engineers of Houston, have developed a method for continuous testing of high-pressure gas-condensate wells under flowing conditions. Tests are conducted with a small-scale separator installation which handles a sampled portion of the stream. The mobile, unitized apparatus is equipped for taking representative samples from the flowing well, reproducing reservoir temperatures and pressures and making two-stage separation runs through a wide range of temperature and pressure. Over 100 test runs can be made daily in the field with good duplication of results.

The sampling device used with this unit consists of a long sealed section of heavy tubing which houses the sampler tube and is fixed to the top of the christmas tree. The sampler tube is forced down into the well tubing by hydraulic pressure until its tip has passed below all take-offs, chokes, shoulders or other obstructions. A sharp-edged, streamlined nipple attached to the end of the sampling tube takes the continuous streamlined flow sample at a point below where turbulence occurs in the well head. The size of the nipple is chosen to that the ratio of its area to the annular space between nipple and tubing is in the same proportion as the ratio between capacity of the testing unit and the flow from the well. This provides equal fluid velocities through the sampler and tubing and furnishes a representative sample of the gas as it passes up through the producing string.

An orifice well tester equipped with manometer gives operators a preliminary means of adjusting the desired flow. The gas sample is boosted to the required pressure for each run in a compressor installed on the test unit. Pressures from 250 lb. per sq. in. to reservoir pressure of the well tested are obtained in the compressor. The temperature of the sample is brought to the

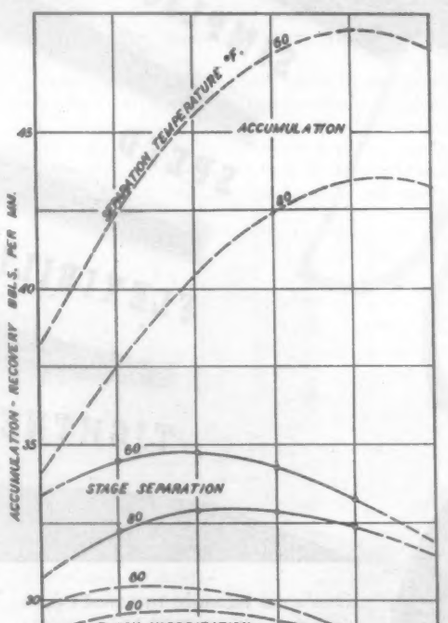

Fig. 8—Effect of separation pressure and temperature on the recovery of condensate by flashing and staging to atmospheric pressure, representing a hypothetical test conducted by engineers of Black, Sivalls & Bryson, Inc.

required point in a thermostatically controlled glycerin bath. This bath is constantly circulated by a pump on the compressor unit, with temperature control provided by throttling. Temperatures up to 240° F. can be held constant and it is possible to reduce the bath temperature to 50° F.

When the gas sample is brought to the predetermined pressure and temperature for a test, it is admitted to the high-pressure separator. The volume of the accumulator at the bottom of that vessel has been accurately calibrated. An escape valve located at the brim of the accumulator is cracked during the run, and the first drop of condensate which is emitted with the thin stream of gas shows the instant that the accumulator has filled to capacity. The volume of this accumulator is used as the basis of all tests.

Gas overhead from the high-pressure separator passes again through the temperature bath and is then flashed to the low-pressure separator which is equipped with a visual calibrated accumulator. Gas from the second stage separation is passed through a scrubber to remove any liquid which may have carried over, and then is accurately measured in a positive gas meter. Volume readings are taken of the low-pressure accumulator and the gas meter when the high-pressure accumulator reaches capacity.

The testing unit is designed for thorough purging before running tests, and bypassing of the sample is provided at the end of a run. The high degree of accuracy obtained in this field unit is attributable to the large volumes of gas run per test, greatly reducing the percentage of error in measuring liquid and gas.

The rapidity with which tests can be run, and the wide ranges of pressure and temperature conditions which can be duplicated allow operators to gather data for curves on recovery in relation to pressure and temperature and variable flow in a comparatively short period. Detailed analyses of condensate and gas may be made to add to the information gained in the tests.

B. S. & B. Service

The well-testing service of Black, Sivalls & Bryson, Inc., developed by Garman O. Kimmell, is finding widespread use in gas-condensate fields. A mobile testing laboratory shown in Figs. 5 and 6 is employed. The service combines full-scale and test-unit separation runs on the accumulation of condensation and the recovery under flash and approximate differential vaporization to atmospheric or storage pressure. Other detailed data regarding the effect of temperature and pressure on liquid and gas characteristics are also provided.

Laboratory runs are made on a portion of the well stream under continuous sampling. The sampling nozzle, chosen to maintain approximately the same velocity of flow in tubing and sample line, takes gas at well-head pressure and temperature. Under that pressure the sample stream is passed through a heat exchanger to adjust the temperature so that after throttling it will be at approximately the predetermined separation temperature. The pressure is then reduced in the throttling valve and the temperature is further adjusted in another exchanger.

Condensate from separation at the determined pressure and temperature is measured in an accumulator vessel. The gas from the separator is heated by exchange with steam to permit throttling to atmospheric pressure without reduction of temperature to a point where hydrates form. The gas is then measured in a critical-flow orifice meter, and corrections are applied for the displacement of gas by the accumulated fluid and

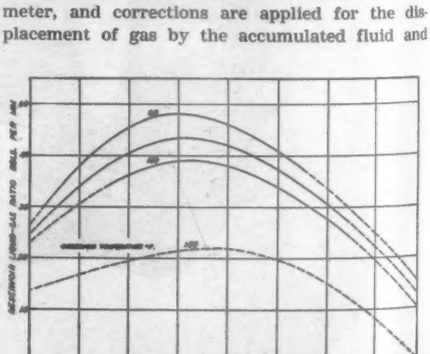

Fig. 9.—Effect of reservoir pressure decline on reservoir liquid-gas ratio in a typical high-pressure gas field

the volume loss from natural gasoline determination by the charcoal method.

Full-scale separator tests are also run on the well, noting the pressure and temperature and the volume of separated gas. Comparison of velocities in tubing and sampler at the point of sampling, as determined by gas-accumulation ratios and gas measurements from test and full-scale separation, shows that a representative sample is obtained when the velocities are approximately equal. The rate of sampling is purposely varied to obtain the effect of velocity ratio in tubing and sampling line on the accumulation for the rate of flow at which the test is conducted. The accumulations are then corrected for the deviations from unit velocity ratio.

In test runs employing the laboratory unit, the accumulation of condensate is investigated over a wide range of pressure and at three different temperatures. The three temperature traverses are limited to a maximum of 100° F. and a minimum which will allow steady runs without hydrate formation.

Stage Separation

Data are compiled on total condensate accumulation and recovery of liquid by flash vaporization and four-stage separation. Efficiency of four-stage separation closely approaches that of differential vaporization, the most efficient separation of gas and liquid. Differential vaporization, however, is a batch process, such as an Engler distillation, while the four-stage separation which approximates it can be carried on continuously in connection with the test run.

In addition to data on accumulation of condensate in the separator and recovery by various stages of pressure reduction, the natural-gasoline content of the separator gas is determined by the charcoal process, and this recovery is added to the condensate to determine the total recoverable liquid in the well stream.

The following physical characteristics of the well's production are determined and plotted graphically:

1. Effects of separator pressure and temperature on the accumulated liquid-gas ratio. Fig. 7 illustrates an accumulation curve on a hypothetical well.

2. Effects of separation pressure and temperature on the recovery of accumulated liquid by flash vaporization. This shows the percentage of accumulated liquid recovered after shrinkage due to liberated gas in solution, as the condensate is flashed to atmospheric pressure, the equivalent of running the liquid directly to storage.

3. Effects of separation pressure and temperature on the recovery of accumulated liquid by four-stage separation. This shows the same data as (2) for reducing the pressure on the condensate in stages. Fig. 8 illustrates the results of these two recoveries.

4. Effects of separation pressure and temperature on the solubility of accumulated liquid by flash vaporization.

5. Effects of separation pressure and temperature on the solubility of accumulated liquid by four-stage separation.

6. Effects of separation pressure and temperature on the super-compressibility of the separated gas. This factor is of importance in calculating compressor capacities for recycling.

7. Effects of separation pressure and temperature on the specific gravity of the separated gas.

8. Effects of separation pressure and temperature on the natural-gasoline content of the vent gas.

9. Effects of separation pressure and temperature on the A.P.I. gravity of the residual liquid by flash vaporization and four-stage separation.

Extra information in this service is available to the producer, including open-flow potential tests, fractional hydrocarbon analyses, molecular weight determinations, Engler distillations and reserve calculations. The effect of reservoir pressure decline in the field is also plotted, as shown in Fig. 9, for a hypothetical field.

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SAFETY — Handy Container for Wiping Cloths

CLEANING equipment around pumping and drilling wells is an indirect safety measure which pays dividends and at the same time makes the operation more efficient. For this reason, production and drilling equipment is washed frequently with distillate, kerosene or gasoline. Generally, to give the finished job a better appearance, a small amount of lubricating oil is mixed with the cleaning mixture.

The process of washing the equipment provides an excellent opportunity of detailed inspection of the working parts. Any fractures in the driving parts, loose connections, worn bearings, loose keys or set screws can thus be detected. Needed repairs are much more easily effected when the equipment is clean and can be handled easily.

A slight source of danger arises from the cleaning, however, due to the oil-soaked rags which are used. If these are not properly cared for, there is a possibility that they may be self-ignited. A carelessly thrown match could start a fire. If stored inside a building, a serious fire may result.

One company has solved this problem by having a well-ventilated container, made from old pipe and screen wire, for the storage or disposal of the wiping cloths. Cloths used for the cleaning of well equipment or pumping powers are thrown into these receptacles, which are always located outside the buildings. A drip pan catches the inflammable mixture coming from the cloths.

These rags can be reclaimed, washed in clean gasoline or kerosene, or washed with hot water and steam if the lease has a "blow barrel." On drilling rigs the rags are generally washed immediately after using and then hung on a guy wire or over some convenient line to dry.

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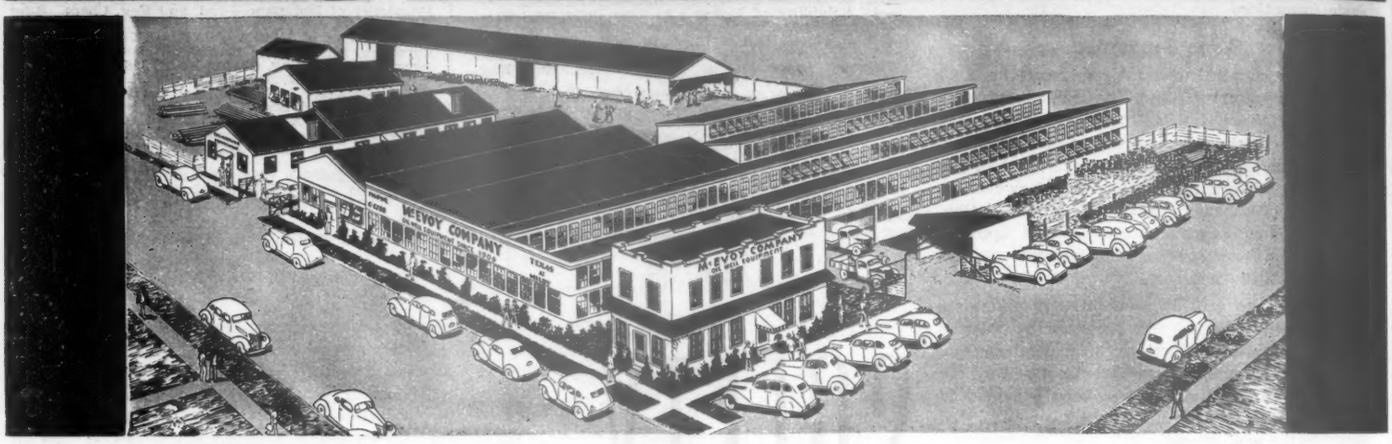

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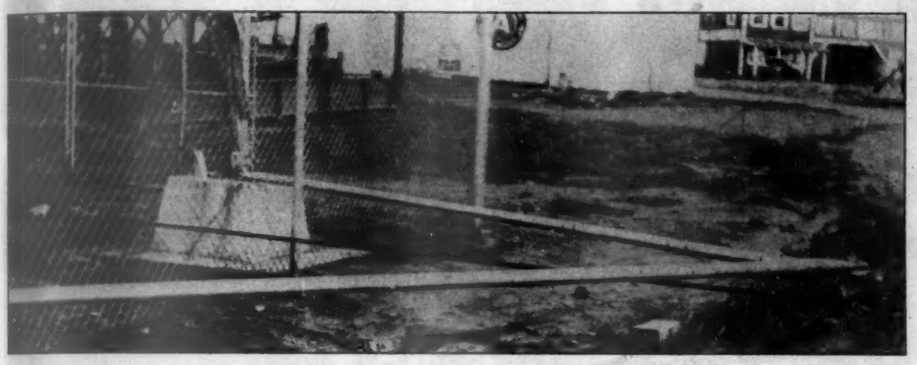
Operating Ideas

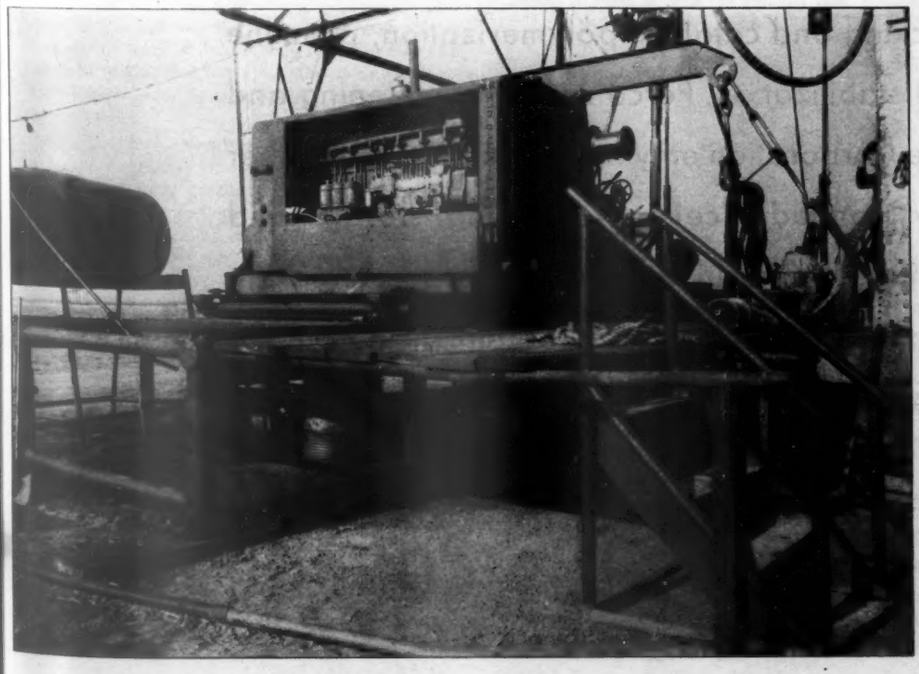
Rod-Line Guard at Road Crossing

Protection of a rod line near a crossing under a highway was provided by a V-shaped guard made of salvaged pipe. Ends of the pipe joining are bolted to the 6-in. casing through which the rod line goes under the highway. The other ends of the V-shaped guard are bolted to the derrick foundations. These two guard pipes, painted with aluminum, prevent driving over the rod line between highway and derrick.



Adjustable Substructure and Platform for Drilling Engine

At one diesel-powered drilling rig in the Griffin field, West Central Texas, the adjustable substructure and platform for the skid-mounted drilling engine and draw works shown here is being used. Detailed construction of the adjustable substructure was given on page 47 of the February 2, 1939, issue of The Oil and Gas Journal, but since then the welder has further improved on his handiwork. Strips of angle iron welded along the top of the substructure prevent any sideward movement of the boards forming the platform. To support the timbers forming a platform around the engine, lengths of old pipe were run through holes cut in the top 4-in. horizontal members of the substructure at one end and in the middle. The far end of the platform rests on timbers supporting the derrick. The entire substructure and platform is constructed so that it may be easily moved from location to location; it is adjustable to the height of the derrick floor. To complete the installation, the portable steps shown at the right of the platform were made from scrap iron and pipe.



Welded Pipe Guard for Rotary-Rig Light Plant

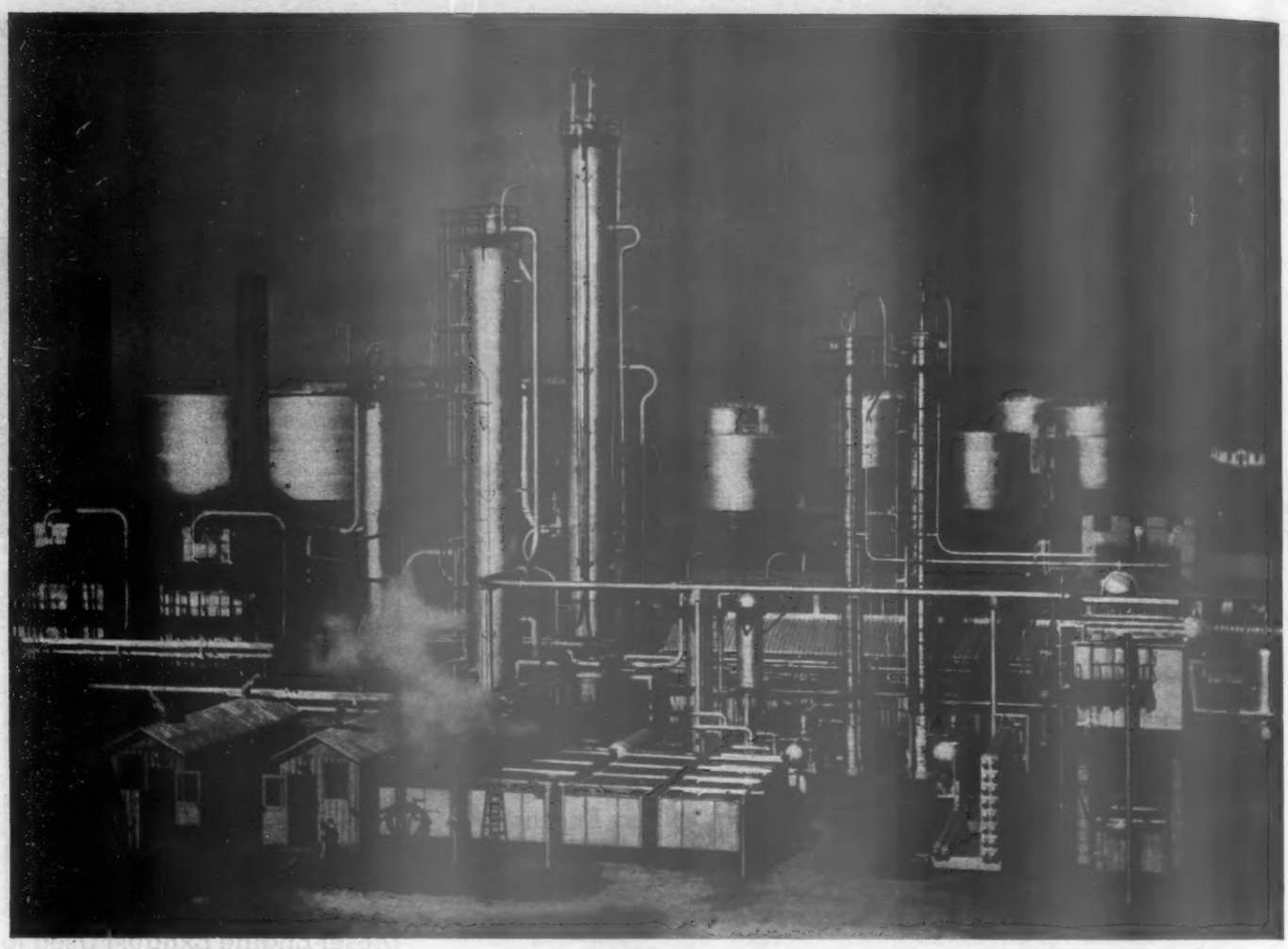
Moving of the drilling rig is often damaging to the equipment, particularly to the smaller pieces such as the light plant. This operator mounted the light plant on skids and built

a frame from 2-in. pipe which completely enclosed it. In addition he installed an eye on the top cross-member for attaching the winch line or cat line. Handling of the light plant is thus made much easier and safer.

Diesel-Engine Exhaust Used for Heating

Provision for the heating of a pipe-line station is provided by equipment which operates in connection with the exhaust. A steel cylinder, mounted on a concrete block, jackets part of the exhaust pipe of 400-hp. diesel engine. A blower driven by an elec-

tric motor circulates air around the exhaust and blows it into the building. In summer the blower can be used for pulling hot air out of the building.



● ***Glacier Production Company's new refinery at Cut Bank, Montana***

Crude distillation, Universal Oil Products Company "Dubbs" cracking and catalytic polymerization, gasoline recovery and stabilization, Perco copper sweetening and Ethyl Gasoline Corporation ethylizing equipment, together with carefully planned receiving, handling, storage and loading facilities, have resulted in a refinery *reasonable* in installation cost and *economical* in operation, producing the *highest quality* motor fuel required by *exacting marketers.*

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Complete Glacier's New Cut Bank Refinery

NEWS certain to quicken the pulse of an industry which is continually seeking new ways to recover more profit-making, high-grade motor fuels from crude oil is to be found in the story of Glacier Production Co.'s new refinery at Cut Bank, Mont., completed in September. Here the cooperation shown among the refiner, the engineers, constructors, and the process licensors produced a novel combination of modern process equipment to provide a complete and flexible operation and to yield high percentages of top-quality products.

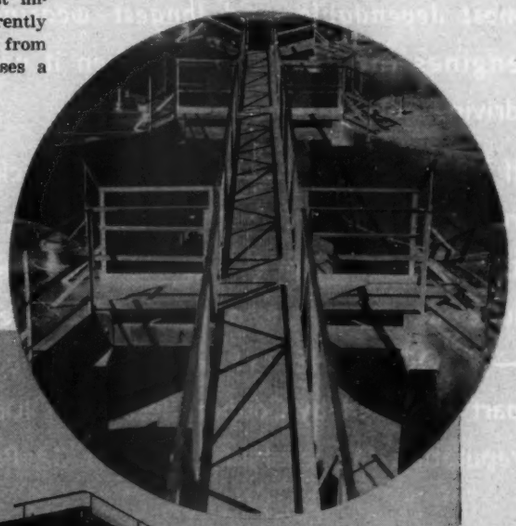
Not alone by reason of its performance does this development challenge interest. By any standard it is the industry's outstanding current news from Montana, for behind its construction is a background of sound oil economics. Picture a border state, rich underground with petroleum reserves, but inadequately equipped aboveground to process this oil. Picture a state which has exported much of its crude production, yet imports one-third of the gasoline it consumes. Consider these two sets of facts in relationship to each other and one will realize the potential market opportunity made available for home-produced, home-processed motor fuels.

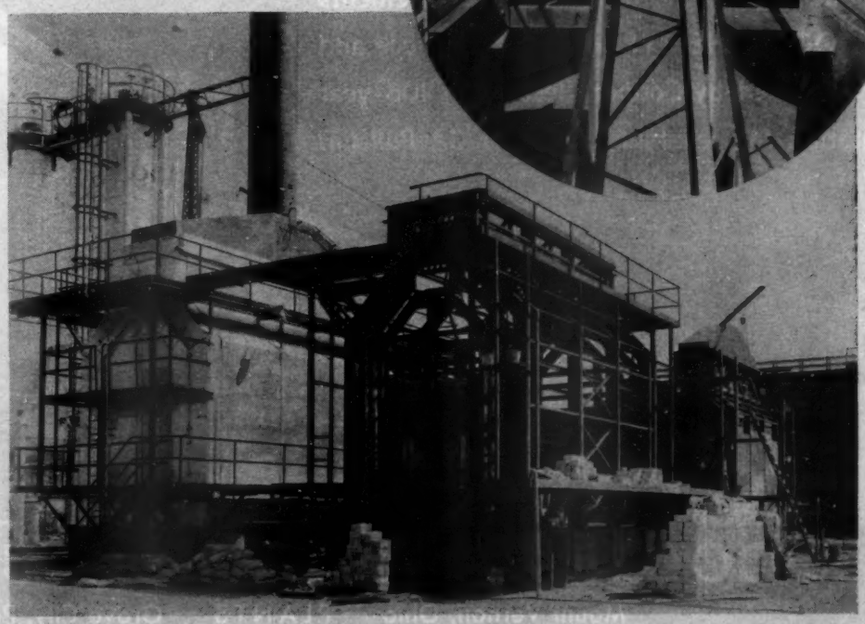
This has been the situation in Montana. Alongside the highways and rails over which tank trucks and tank cars roll, bringing Wyoming, California, and Mid-Continent gasoline for use in Montana automobiles, stand the power lines of the Montana Power Co. Through these lines electric energy is supplied to meet the needs of a major portion of the state. Through them goes power to the world's greatest copper mines at Anaconda. And when you ride across the state in one of Chicago, Milwaukee & St. Paul's crack trains, your electric locomotive is energized by Montana Power Co. current.

Wholly-owned subsidiary of the Montana Power Co., the Glacier Production Co. is engaged in producing, transporting and marketing fuel gas for industrial and domestic use. For many years Glacier supplied artificial gas to Helena and Butte. In the course of securing an adequate source of natural gas with which to replace its artificial gas, Glacier acquired and developed gas reserves in the Cut Bank field. Then Glacier and Montana Power were moving forward in a pattern familiar to western utilities but in 1932 oil was discovered at Cut Bank, and overnight the Glacier Production Co. found itself in the oil business.

Today the Cut Bank field is Montana's number one producing area by a large margin. Its 1938 production of 2,750,000 bbl. of crude oil represented 56 per cent of the state's total. Thus to the normal activities of a public-service corporation, Montana owes the development of its most important petroleum-producing center. Currently one-third of the Cut Bank crude oil comes from Glacier's wells. The company owns or leases a block 5 miles wide by 30 miles long — approximately 100,000 acres of gas and oil land.

In the immediate past, Glacier, along with many another Cut Bank producer, found Canadian refiners a ready market for its crude. During 1937, however, large oil reserves were developed in the Turner Valley, near Calgary, Canada. Obviously Canadian refiners turned to this source for their





The picture at the top of the page presents a general view of Glacier Production Co.'s new 4,400-bbl. per day refinery located at Cut Bank, Mont. Seen below is a construction view showing heavy-oil, light-oil and crude-topping furnaces. At right is seen the platform connecting rundown tanks

TOUGH ENGINES FOR A TOUGH JOB!

This new refinery, one of the most modern and efficient in the U. S. A., chose the *toughest, most dependable,* and *longest-wearing* gas engines they could get — when it came to driving hot-oil pumps.

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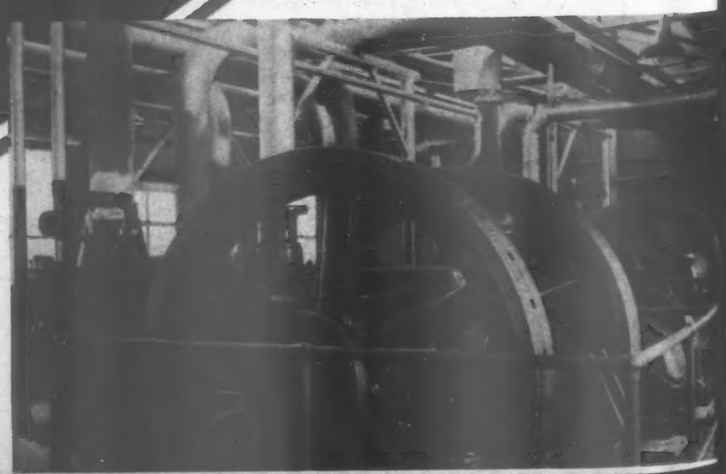
Three Type GA, two cycle gas engines driving hot-oil pumps in Glacier Production Company's new Cut Bank refinery. The single-cylinder Type G-AO engine is rated 45 to 75 hp. The twin-cylinder Type G-AW engines are rated 100 to 150 hp.



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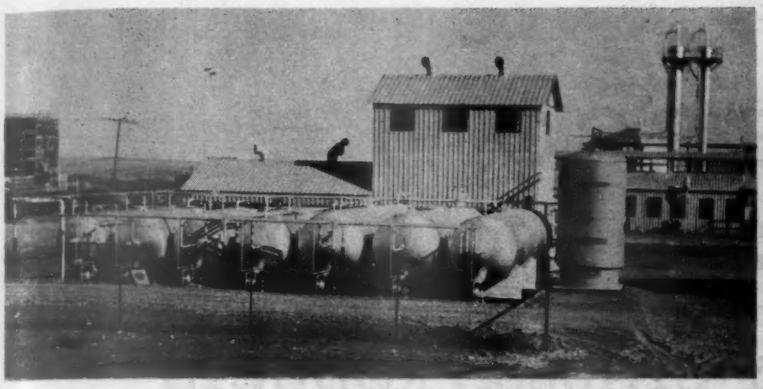
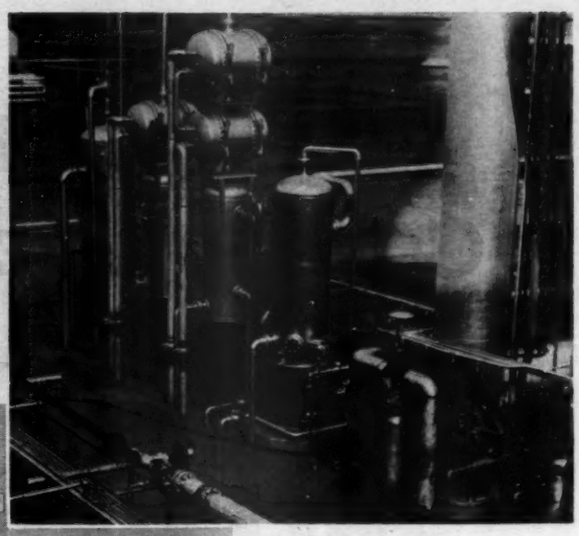




Upper left: View of sand filter and chemical tanks. Above: Receivers, accumulators and closed condensers. Left: Central view of tank-loading rack at refinery

supply, and Cut Bank producers were faced with the necessity of seeking other outlets. Glacier's vice president and general manager, Frank W. Bird, figuratively rolled up his sleeves and went to work on this problem. Every time he drove the 292 miles from his ofice in Butte to the Cut Bank field he passed hundreds of Montana cars. In their tanks a part of the gasoline was a Montana product, but still one-third came from out of state. Therein, thought Mr. Bird, lay the solution to Glacier's problem, and also Cut Bank's difficulties. So Glacier decided to construct its own refinery and make Cut Bank oil available as gasoline for home consumption.

Processing for Socony-Vacuum Oil Co., Inc.

Concurrent with Glacier's decision to build a refinery, the Socony-Vacuum Oil Co., Inc., was contemplating a similar project, as this major oil company also saw the necessity of relieving the distressed crude-oil situation in northern Montana by providing a new outlet. A number of independent producers operating at Cut Bank had pooled their interests and made arrangements to market their output to Socony-Vacuum. With Glacier's refinery already under construction, Socony-Vacuum elected to cooperate in the solution of the problem thereby avoiding a duplicate investment, and taking full advantage of the modern refining facilities being installed. Consequently a contract was entered into, whereby Glacier processes Socony-Vacuum's crude oil, to the latter company's rigid specifications.

This arrangement resulted in expanding the original refinery layout. Glacier now receives in its 80,000-bbl. storage tanks crude from its own wells and from Socony-Vacuum sources. These materials are processed to the required specifications, with products going to separate finished storage from which they are loaded out as directed by the respective sales departments of each of the two companies.

The combined operation permitted the installation of a refinery of sufficient size to provide low operating costs; to incorporate the most modern facilities; and to make available for Montana consumers petroleum products of high quality from home-produced crude. Noteworthy also is the economic stabilization of the Cut Bank crude-oil situation brought about by this consolidation. Glacier is disposing of its white products to the major oil companies and large independents.

Refinery

It should be evident at this point that economic considerations governed every step of the development, from the advent of Glacier into petroleum production, through marketing of crude, down to the present in which Glacier enters the refining field. Just as the economics of Montana's oil situation brought about each of these results in turn, so the specific economic requirements of the Cut Bank producing situation dictated the engineering objectives of the new refinery.

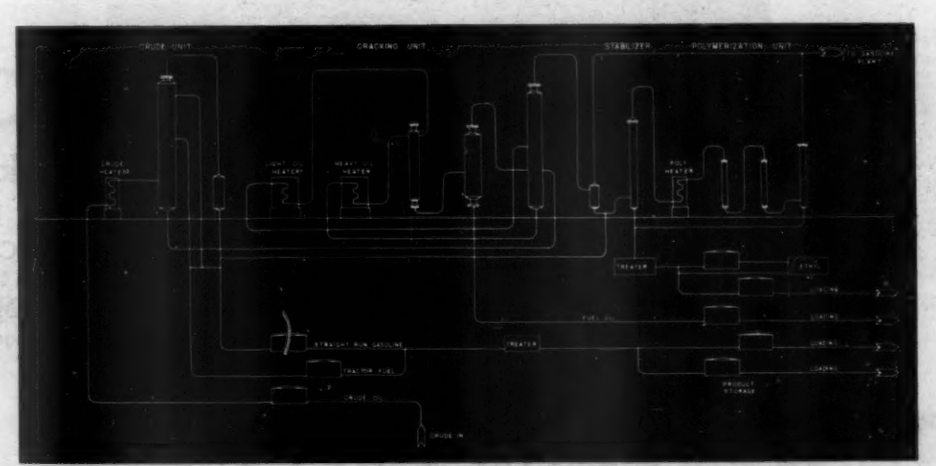
Refinery Equipment

Accordingly, in December 1938, when Glacier contracted with Bechtel-McCone-Parsons Corp. to engineer and construct the plant, a list of requirements was established.

First requirement was to design and build a plant capable of producing a maximum percentage of high-octane gasoline, together with high-grade tractor fuels and readily-marketable fuel oil. In operation the refinery produces a 75 per cent yield of high-quality gasoline (75 octane); 20 per cent of commercial locomotive fuel oil, with only 5 per cent gas loss—results produced by the proper selection of equipment, processes and process combinations.

All operations required to produce a finished gasoline are conducted consecutively in the process equipment, with the refinery receiving crude from the tank farm and delivering finished gasoline to tank storage. By thus completely processing, ready for final storage and delivery, in a single coordinated run, without intermediate storage and handling, the operation is simplified and the possibilities of deterioration are eliminated.

(Continued on Page 62)



Flow chart of the new refinery

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In addition to reducing sweetening costs, reducing octane degradation, and reducing volume losses, the PERCO COPPER SWEETENING process, because it does not form deleterious higher alkyl polysulfides, gives an unusually stable sweetened gasoline. Perco sweetened gasolines show unusually good color stability when subjected to sunlight tests and long time storage tests.

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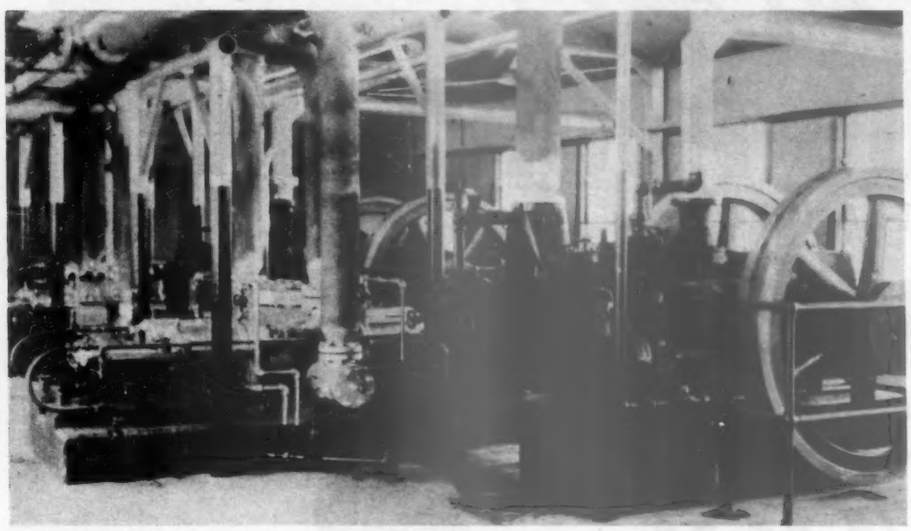
Vogt Drop Forged Steel Valves, Fittings and Flanges are used in the new and modern Glacier Production Company refinery at Cut Bank, Montana, engineered and built by Bechtel-McCone-Parsons Corp. of Los Angeles, California.

Because Glacier serves various marketer-customers, flexibility was essential to allow the refiner to meet the varying product specifications of these customers. The refinery includes a number of process units arranged so a variety of product streams can be handled separately or concurrently. An unusual number of instruments and controls have been installed, and flow through the plant is readily adjustable for differing products. Treating equipment is arranged so that one stream or several streams may be handled as produced. Storage accommodates the various products in separate tanks.

Montana experiences a fluctuation of demand for various products by seasons to an even greater extent than other sections of the country. Since it is necessary to maintain refinery production at a steady rate, the refiner required a storage system for finished products able to meet fully the conditions of this seasonal movement. Extensive study was given the situation, with the result that tankage capacity and arrangement provides Glacier with an ample supply of finished products for delivery throughout the brisk spring and summer periods, and permits accumulation of stocks during the quiet winter months.



Scene inside the oil-transfer room showing compressors and hot-oil pumps with their engines

Adequate provision for expansion was desirable. In planning, this provision was made at the outset. The arrangement is such that at any time additional expansion can be made with a minimum of difficulty to care for increased refining capacity, and for later developments in refining processes. When future demand requires a larger volume of polymer gasoline, butane cracking facilities can be installed. The capacity of the present polymerization plant, with its stabilization facilities, is sufficient to meet this future requirement.

Above all, quality construction was essential; processes and equipment were to be the most modern and efficient available. The refinery as completed utilizes the latest developments in distillation, cracking, polymerization and treating. It includes all necessary auxiliary apparatus.

In meeting these requirements, during the design and construction periods E. M. Parkin, Glacier Production Co.'s refinery superintendent, worked closely with the contractor's engineers and with representatives of the process licensors, enabling them to incorporate fully all operating features desired by the refiner.

The design selected includes Dubbs two-coil selective cracking with gas stabilization, Universal Oil Products Co. catalytic polymerization, Perco Perco, Inc. The ethyl-blending plant, licensed by the Ethyl Gasoline Corp., was built to its specifications.

Before the installation of refinery equipment, the Glacier Production Co. was operating at Cut Bank an up-to-date absorption plant producing natural gasoline, sold for blending purposes, and a propane-butane mixture that is liquefied and sold for bottled gas and motor-bus fuel. To serve this plant and its extensive drilling and production operations, Glacier operates its own drilling rigs, a complete machine shop, boiler plant, dwelling quarters, office, air, water, electric, and other facilities. With the new refinery located directly across the highway from the absorption plant, these facilities and accommodations were all available to the refinery, resulting in economies both in initial installation and operating costs.

On June 29, 1939, 112 days after the start of field construction, the initial installation was ready brought on full stream following a 3-day heating up and test period. During the initial-run period which followed, the plant operated smoothly, and consistently handled in excess of the design capacity with products in all cases meeting the rigid specification requirements.

Redwood tank used in treating system

Meanwhile construction continued on the crude-unit installation and cracking-plant enlargement, and on September 9 the refinery shut down for tying in of the added equipment, with operation being resumed on September 20. The refinery as now enlarged and completed is operating with a charge capacity of 4,400 bbl. per day, producing therefrom straightrun gasoline, composite gasoline, tractor fuel and locomotive fuel oil.

Pressures and temperatures throughout the plants have been maintained at optimum values since operation began, with no indication of coke accumulation or corrosion. The treating plant has performed in a satisfactory manner, producing a sweet and stable gasoline; and the ethyl plant, as well as all other units, has functioned with complete satisfaction.

The crude being processed is a Cut Bank 37°-39° A.P.I. oil obtained from the Cut Bank oil sand at a depth of approximately 2,900 ft. It is substantially free of solids and water. A typical distillation follows:

Gravity, °A.P.I.	38.8
Initial boiling point, °F.	95.0
Per cent off at 400° F.	35.8
Per cent off at 437° F.	40.8
Per cent off at 532° F.	53.0
Per cent off at 572° F.	59.4

During the test runs the typical yields were found to be as tabulated below:

	Per cent
Gasoline (385° F. end point)	75
Fuel oil (150 seconds S.F.v. at 122° F.)	20
Gas and loss	5

The finished gasoline consisting of a composite of straightrun and cracked gasoline blended with polymer gasoline, natural gasoline and a small quantity of tetraethyl lead was a 375°-385° F. end-point product of 73-octane number meeting rigid house-brand specifications.

A premium-grade gasoline can be produced as desired by heavier leading. If a 400° F. end-point gasoline were produced, the yield would be increased several per cent.

The fuel oil produced meets the following railroad specifications:

Gravity, °A.P.I.	4.2
Viscosity, seconds S.F. at 122° F.	125
B.s. and w., per cent	0.1
Flash, COC °F.	250

Crude-Distillation Unit

The crude-distillation unit utilizes a 6-ft. diameter fractionating column and is sized to process 4,400 bbl. of crude oil per stream-day. The plant may be operated in either one of two ways: First, it can be operated to produce a topped crude for charge to the cracking unit, in which case a straightrun gasoline is recovered overhead, or alternately, it can be operated to produce a reduced crude for charge to the cracking unit, in which case a light gasoline, a naphtha and a kerosene distillate will be recovered as white products.

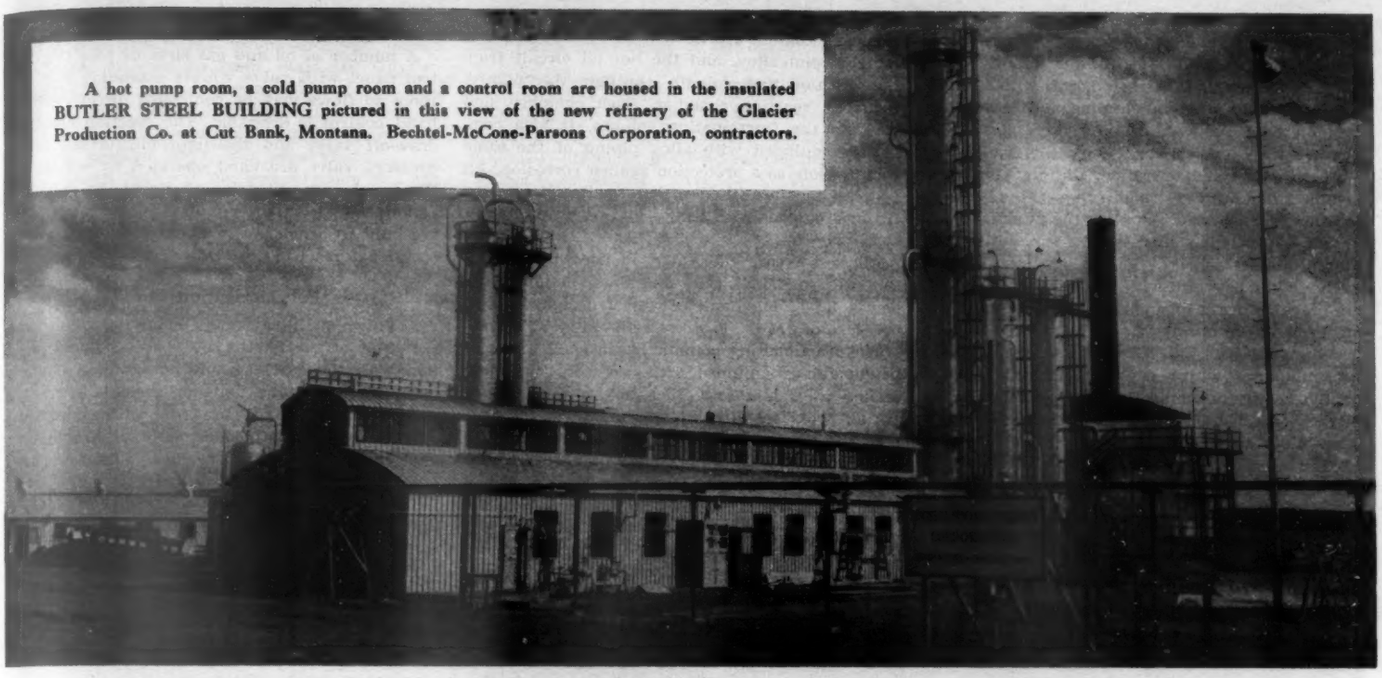
A straightrun gasoline is produced by blending the light overhead with a portion of the naphtha cut, while the remaining naphtha is blended with kerosene distillate to produce a desirable tractor fuel.

The straightrun gasoline flows either through rundown tanks and the treating plant to finished storage, or to the cracking-unit stabilizer as a part of the composite gasoline.

Fuel economy in this unit is maintained through the use of heat-exchange equipment and by utilizing exhaust steam from the reciprocating process pumps as an aid to distillation. A special-type firing crude heater has been provided.

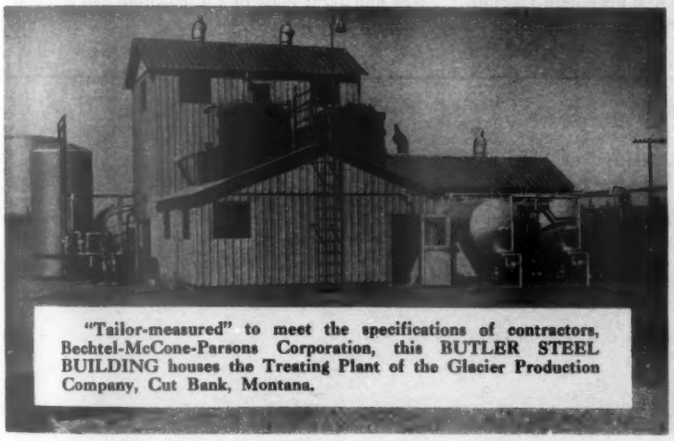
(Continued on Page 66)

Another Modern Refinery Goes Modern All The Way!



A hot pump room, a cold pump room and a control room are housed in the insulated BUTLER STEEL BUILDING pictured in this view of the new refinery of the Glacier Production Co. at Cut Bank, Montana. Bechtel-McCone-Parsons Corporation, contractors.

GLACIER REFINERY AT CUTBANK, MONT.



"Tailor-measured" to meet the specifications of contractors, Bechtel-McCone-Parsons Corporation, this BUTLER STEEL BUILDING houses the Treating Plant of the Glacier Production Company, Cut Bank, Montana.

Housed in Permanent, Firesafe

BUTLER
STEEL BUILDINGS

The Ethyl Treating Plant of the Glacier Production Company refinery at Cut Bank, Montana, is safely housed in this fire-safe BUTLER STEEL BUILDING installed by Bechtel-McCone-Parsons Corporation, contractors.

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The Dubbs two-coil selective cracking unit embodies a compact in-line arrangement of equipment to provide accessibility, safety and greatest operating convenience. It can be charged with straight crude directly, wherein gasoline and locomotive fuel oil are produced, or alternately it can be charged with reduced crude from the crude unit. With this alternate operation, the cracking-plant stabilizer handles the straightrun gasoline brought in from the crude unit, as well as the cracking-plant gasoline, producing therefrom a composite stabilized product.

The unit is provided with two separate furnaces, one cracking heavy oil and the other cracking light oil, each under optimum conditions of pressure, and temperature. This two-furnace arrangement, in combination with accurate control of pressure on the reaction chamber, allows great flexibility in the control of cracking conditions and consequently permits the obtaining of maximum yields of high-octane gasoline. The pumps, furnaces and allied equipment are suitable for permitting wide variation in the recycle ratio so that optimum cracking conditions can be achieved for charging stocks varying over extensive ranges.

Cracking Unit Equipment

The heavy oil and light oil heaters are of a special type, arranged with gas burners for handling either natural gas or cracking plant gas. Both furnaces are Key Co. Type 7000 chromium-molybdenum headers, and the tubes are chromium-molybdenum with silicon, seamless alloy steel. Leeds & Northrup Micromax temperature controllers are installed on each furnace to automatically control the amount of gas fired in order to accurately maintain a uniform temperature in the oil at the furnace outlets.

The reaction chamber, flash chamber, and fractionating column are lined with 4-6 chromium ½ molybdenum alloy, and the hot oil circuit from the fractionating column through the pumps, furnaces, reaction chamber, flash chamber, and back to the fractionating column, is also completely equipped with alloy piping of the same composition, as a protection against corrosion. All process lines are fitted with forged steel screwed fittings or welded fittings and cast or forged steel valves.

All vessels are fabricated in accordance with the A.P.I.-A.S.M.E. code, and the reaction chamber, a 3-ft. 8-in. diameter vessel designed for a pressure of 375 lb., is stress relieved and X-rayed.

The fractionating column has a shell 60 ft. in height and is equipped with cast iron removable bubble trays and cast iron caps, and the trays are all provided with internal manways for easy access to the interior of the column.

All process pumps are Wilson-Snyder horizontal simplex and duplex steam pumps equipped with pot valves. The Wilson-Snyder horizontal duplex hot oil pumps are of the double acting, plunger type with forged steel alloy blocks and are driven by Cooper-Bessemer two-cycle gas engines. There are two heavy hot oil pumps 5⅛ by 12-in. operating at 730 lb. discharge pressure and one 4 by 12-in. light oil pump of similar design operating at 850 lb. discharge pressure.

The main pump and control house is a Butler prefabricated steel building with insulated walls, and it is divided into a hot pump room, a cold pump room, and an instrument control room. Instruments and controls for the regulation and observation of temperatures and pressures throughout the process equipment are centralized on a panel in the control room and so arranged that detailed operation of the plant can be closely watched and controlled at all times.

A number of oil and gas streams pass the control panel with valve wheels extending into the room so flows may be controlled directly where hand control is desirable. The reaction chamber draw-off valve and the light oil furnace back-pressure valve are hand operated by wheels on the panel with extension shafts to the valve locations. These valves are highly backgeared and are built to provide very close control with only occasional resetting.

Polymerization Plant

A Universal Oil Products' catalytic polymerization unit of the latest type operates in conjunction with the cracking unit to produce a maximum of high-octane polymer gasoline from the gas produced in the cracking operation. This polymer gasoline is blended with the straight-run and cracked gasolines to produce a finished gasoline having a higher octane number.

The butane feed to the polymerization plant is liquefied by a stabilizer and charged to the polymerization furnace by a piston pump in contrast to the usual method of charging as a vapor through use of compressors. The liquid system has the advantage of lower power consumption, lower operating cost and more uniform control, which shows itself in improved performance.

Liquid from the stabilizer reflux accumulator is pumped through a heater from which vaporized feed flows through primary and secondary catalyst towers and through a partial condenser into the polymer gasoline stabilizer column. Fixed gases and light ends of the gasoline are removed overhead and partially condensed. Condensed material is pumped back to the polymer stabilizer

BECHTEL-McCONE-PARSONS CORPORATION

ENGINEERS FOR THE NEW *Glacier Production Company's Cut Bank Refinery*

Selected VULCAN STEEL TANK CORPORATION TULSA, OKLAHOMA

EQUIPMENT FURNISHED

Crude Fractionating Tower 72" I.D. x 62' 8"
23 Trays
Shell ⅜" Ellip. Heads ⅝"
40 Tons
Kerosene Distillate Stripper
Straight Run Receiver
Sand Filter Tower
Pressure Vessels 7' x 30' 0"
Pressure Vessels 6' x 30' 0"
Various Scrubber Vessels

We take pride in the Engineers' confidence in VULCAN facilities, workmanship and materials, in selecting VULCAN for the fabrication of these important units of the Glacier Refinery.

column as reflux, uncondensed gases are removed from the reflux accumulator and passed to the natural gasoline plant. Stabilized polymer gasoline leaves the reboiler, is cooled and blended with the main gasoline stream, and sent through the treating and sweetening unit to storage as a finished gasoline ready for ethylizing.

Interposed between the charge pump and the polymerization furnace is water wash and caustic scrubbing equipment for removing hydrogen sulfide from the polymer plant feed.

Treating Plant

The refinery has been provided with extensive treating facilities, designed and licensed by Perco Inc., to produce finished gasolines free from objectionable and corrosive sulfur compounds.

The composite cracked, straightrun, and polymer gasoline goes to the treating plant under its own pressure and passes through a motor-driven contactor where it is intimately mixed with caustic. This mixture passes to a settling tank from which the gasoline stream goes to the contactor of the sweetening unit. In this unit it is mixed with a solution of copper chloride, the mixture passing through Haveg and Durichlor piping to a glass-lined tank where the treating solution separates from the gasoline and is withdrawn to regenerating tanks where the solution activity is restored by aeration.

The treated gasoline leaving the glass-lined tank is twice contacted and separated from a sodium sulfide neutralizing solution, after which it goes through a sand filter to rundown tanks as a finished product.

The straightrun gasoline and tractor fuel that are produced go through individual caustic wash units en route to rundown tankage from which they are treated alternately through another copper treating unit, each product having its own sodium sulfide neutralizing system.

Inhibitor System

To further insure the highest quality of gasoline, which will be free from gum, and which will remain free from subsequent gum-forming tendencies, an inhibitor system has been provided.

This system, through the use of a blow case and proportioning device, introduces an accurately measured quantity of Universal Oil Products Co.'s inhibitor into the finished composite gasoline stream as it passes on its way from the treating plant to rundown and storage tanks. This system has proved highly satisfactory, and uniform results are accomplished with a minimum of operating attention.

Ethyl Blending Plant

The ethyl blending plant consists of a standard Ethyl Gasoline Corp. 4,250-gal. bulk storage installation, complete with building and safety features.

Ethyl fluid is received by tank car and transferred to a storage tank on scales by vacuum, from which it is removed by vacuum as required for blending. A high-pressure stream of gasoline passing through an eductor furnishes the vacuum required for transferring the ethyl fluid. Gasoline is pumped from a storage tank in the tank farm to the ethyl house where a small portion is diverted through the building to receive the fluid and carry it back to the main gasoline stream which returns to the blending tank. After the required volume of ethyl fluid has been inducted, the tank is circulated to insure complete blending of the ethyl fluid with the base gasoline stock and any natural gasoline that may have been added during the operation. The result is a tank of specification gasoline ready for loading and shipment.

The ethyl blending house is equipped with complete and extensive lavatory facilities for the safety and convenience of the operators.

Cooling-Water Circulation System

Cooling water required in the process area is circulated by two Cameron centrifugal pumps individually driven by Ford V-8 gas engines. A Fluor aerator-type cooling tower cools the circulated water to 80° F. A spare engine and pump is maintained as a standby.

In order to prevent scale formation in the water jackets of the gas engines driving the water pumps and the hot-oil pumps, an auxiliary water system circulating 150 g.p.m. of soft water obtained from steam condensate is provided.

The principal pressure vessels and furnaces are protected by Parsons' double-duty pressure relief and dropout valves which afford pressure relief protection at all times. Also, by means of controlled air pressure these valves enable the control room operator to remove normal operating pressure on the unit by opening the valves and allowing the contents of a vessel to pass out safely to the blowdown tank. Thus the operator may shut down the plant in a few seconds at any time without leaving the control room.

In the blowdown system the discharge of all relief and dropout valves is connected to a blowdown tank outside the process area. This tank is provided with a continual atmosphere of exhaust steam and is cooled by water spray during the blowdown periods.

Buildings, vessels and pump foundations are equipped with steel pipe drain lines arranged in

"VAREC"

Tank Protection Equipment Specified Exclusively at Glacier Production Company's Refinery

The Glacier Production Company's Cut Bank Refinery in Montana was designed and erected by Bechtel, McCone, Parsons Corporation of Los Angeles. Tanks by Chicago Bridge & Iron Co. All protective equipment by Vapor Recovery Systems Co.

"Varec" Conservation Vent Units and Gauge Hole Covers are made of aluminum. They are not subject to electrolysis as the potentials of all parts are in equilibrium. They resist the attacks of hydrogen sulphide and the elements. They do not corrode in sour gas service. They do not freeze in bad weather. They have more flow capacity than any other units of the same size.

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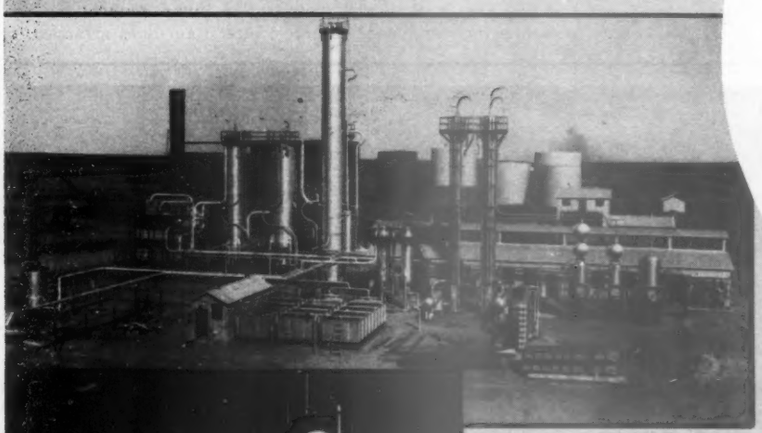
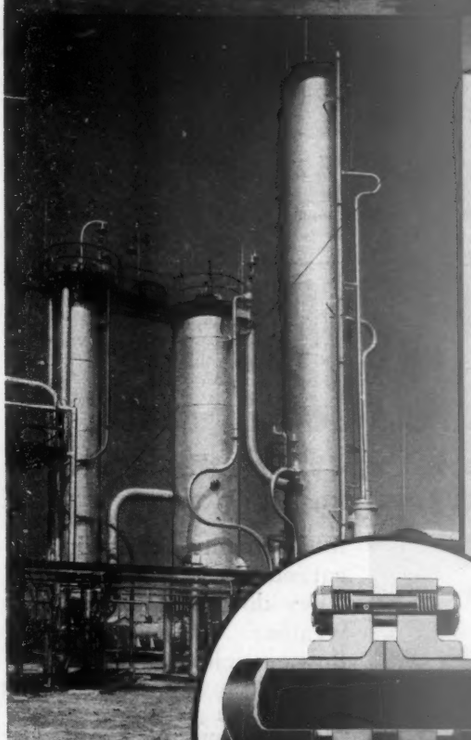
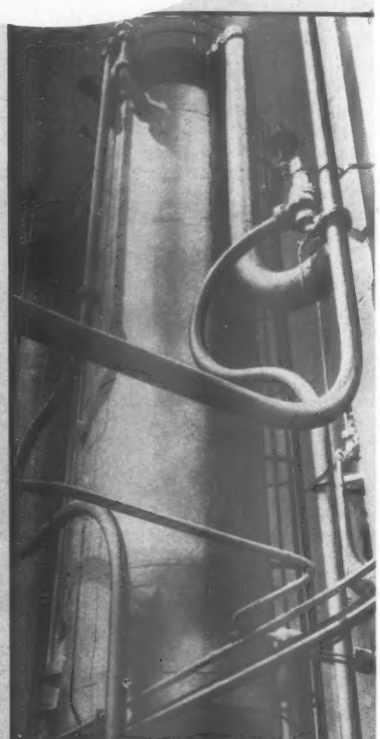
PIPING BY MIDWEST

AT CUT BANK REFINERY OF GLACIER PRODUCTION COMPANY







BECHTEL-McCONE-PARSONS Corporation selected Midwest fabricated piping exclusively (both carbon steel and chrome-moly) for the new Cut Bank Refinery of the Glacier Production Company. Like many other contractors and refiners, they appreciate the many advantages Midwest has to offer. Strategically located to serve the oil industry are three well-equipped Midwest plants . . . each manned by a highly skilled organization. The most modern piping practices (which are used by Midwest) assure highest grade workmanship, dimensional accuracy and prompt delivery.

Whenever you need fabricated piping it will be to your advantage to get in touch with the nearest Midwest office.

GLOBACK VAN STONE Joints were used on the alloy piping because of the extra strength provided. The back face of the lap is a segment of a globe or sphere which provides more metal in the critical area of the lap. The lap is stiffer, the flange is assured a fair seating, and bolting pressure is uniformly distributed.

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a system which includes a manhole with sealed inlets separating the various branches. An outlet sewer from the manhole carries waste to an oil separator where water is clarified for disposal and oil recovered for final dewatering and reprocessing.

Rundown and Storage Tanks

As previously noted, tankage was arranged to properly correlate Montana's highly seasonal market demand with the steady production rate of the refinery. As a result, the refinery has been provided with more than 500,000-bbl. storage capacity for crude oil and various refined products.

Separate storage is provided for the various grades and specifications of gasoline, fuel oil, reduced crude, base stocks and tractor fuels. Adequate rundown tanks are provided so that all of the various products can be carefully checked on the way to storage.

Tanks, installed on 4-in. oiled sand pads, are of welded construction, equipped with ladders, stairways, Varec pressure and vacuum relief valves, flame arresters, swings, and manways. Steam heating coils are provided in the crude oil storage tanks, in the reduced crude tank, in both fuel oil tanks, and in the slops tank.

The oil transfer system taking products to rundown tanks under plant pressure, transferring stocks from rundown tanks to storage and from storage to loading facilities, utilizes Cameron direct-connected motor-driven centrifugal pumps and a Worthington steam-jacketed rotary pump for handling fuel oil. Pumping facilities are arranged to permit the blending of stocks produced into various products for distribution, and to carry out the ethyl blending and natural-gasoline blending required.

The tank-car loading rack accommodates 20 cars with loading connections distributed in relation to the volume to be handled.

Advantage has been taken of the topography of the site to allow loading all products by gravity. Cars are loaded in 30 to 40 minutes. Facilities are also provided for truck shipments.

Electric Power and Light

The electrical distribution system is modern to the last detail; so much so, in fact, that more than ordinary interest attaches to it. There is not a fuse on the whole refinery, even to small electric-light circuits, each being equipped with mechanical circuit breakers of the vaporproof type. All of the work, both design and construction, was done by the Montana Power Co.'s personnel.

Electric power from a 33,000-volt three-phase supply is reduced to 2,300 volts at the transformer station and is then carried in two underground cables to the refinery distribution panel, which is installed in the main electric-control house, a steel building located in a nonhazardous area. In the control house are centralized all power and light transformers, and a dead-front, dead-rear type switchboard from which power is distributed through underground cables to the various motor and lighting circuits in the refinery. All motors are controlled by push-button starters operating open-type circuit breakers in the switch and control house.

Explosionproof motors and explosionproof condulets and fittings are used throughout the installation. Of particular interest is electric lighting control mounted in the vaporproof box in the front of the pump and control room from which point lights for the entire plant are operated.

Floodlights for the process area are Benjamin Duo-Service with lowering attachments. In pump houses, electric-control houses, ethyl house, and at vessels and furnaces, vaporproof reflecting and refracting globe-type lighting fixtures are used.

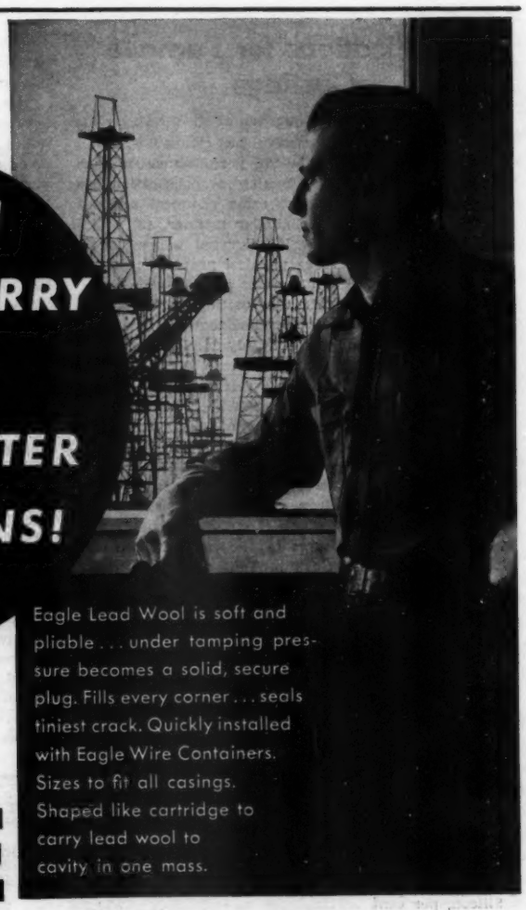
An unusual feature of this refinery is the installation of sodium vapor lights along the quarter-mile stretch of the Roosevelt Highway (U. S. Route 2), which runs directly between the refinery and the natural-gasoline plant. This district has been set aside as a restricted residential zone with the best illumination facilities available because of the dwelling houses that have been provided along both sides of the road adjacent to the refinery for company employes.

Plant Operation

In starting up the refinery the contractor and the process licensors cooperated in training Glacier's operating crews. Operators of the Universal Oil Products Co. directed the initial runs of the Dubbs cracking unit and the poly unit and trained crews to operated them. Perco, Inc.'s representatives directed the initial runs of the treating unit, and the Ethyl Gasoline Corp.'s representative started the ethyl-blending plant.

The Bechtel-McCone-Parsons Corp. organization coordinated operation of the processes and auxiliaries involved and supervised the initial runs of the refinery as a whole, and assisted Glacier in training their crews to handle the various functions involved in the plant.

As a result of this program, the refinery was taken over by Glacier as a complete operating installation, with all crews properly instructed and all initial adjustments made. The flow of crude oil and products has been scheduled and brought to a normal operating basis for handling and shipping finished products.



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Progress in METALS

By W. L. NELSON

Specifications for Furnace Castings

FROM time to time, the question of specifications for heat-resisting furnace castings has claimed attention because of discrepancies in the performance of such castings. The objects of drafting a specification are primarily—(1) Alloys of the same chemical analysis often fail to perform in a similar manner, (2) to insure load-carrying capacity at elevated temperatures, and (3) to insure necessary physical properties during service, particularly ductility after heating.

The Calorizing Co., other alloy casting manufacturers and consumers, have developed a tentative standard specification No. 10-38 (revised July 25, 1938) entitled, "Heat-Resisting Castings for Refinery Service." Two types of electric furnace alloys, referred to commonly as 25-10 chromium nickel and 20-8 chromium-nickel steel, are considered. The first of these (25-10) is specified in grades D, E, and F which differ only in the physical properties that they exhibit and the second alloy (20-8) as Grade C. The specifications outline the method of manufacture, chemical composition, tension test requirements, creep strength and other less important details. Features of the specifications are given in a condensed form in Table 1. In designing tube support it is recommended that a working stress not exceeding 16.7 per cent of the ultimate strength be used for the lower temperatures and the following percentages of the creep strength at higher temperatures:

	Per cent
For 2-year service	65
For 4-year service	60
For 6-year service	55
For 8-year service	50

For compression loading, use 1.8 times the working tension stress recommended above, and for shear use 0.8 times the working tension strength given above.

The major difference in grades D, E, and F is the percentage elongation after heating at 1,400° F. for 24 hours and cooling to 400° F. in the furnace—and the creep strength. The Calorizing Co. feels that great importance should be attached to the ductility after heating, to insure against the brittleness that often develops in furnace castings during service. Doubtless, ductility after heating must be difficult to attain, or such refinement of the specifications cannot be justified.

The manufacturers of heat-resisting castings are to be congratulated for attacking the ills of furnace castings and formulating specifications for regulating their use and manufacture. Nevertheless, the detailed nature of the specifications makes it appear that some manufacturers of dependable castings may be handicapped by the specifications. However, these tentative specifications may assist in determining the practical usefulness of creep strength tests and in clarifying the strange behavior of certain heats of furnace castings.

TABLE 1—TENTATIVE SPECIFICATIONS OF HEAT RESISTING FURNACE CASTINGS

Chemical composition*—	Grade C	Grade D	Grade E	Grade F	Tolerance of check (per cent)
Chromium, per cent	19-23	24-27	24-27	24-27	0.6
Nickel, per cent	7-10	10-12	10-12	10-12	0.4
Manganese, per cent	.5-1.25	.5-1.25	.5-1.25	.5-1.25	0.1
Silicon, per cent	.25-1.75	.25-1.75	.25-1.75	.25-1.75	0.1
Sulfur, per cent (max.)	.05	.05	.05	.05	0.01
Phosphorus, per cent (max.)	.05	.05	.05	.05	0.01
Carbon, per cent	...	...	...	...	0.02
Tensile strength, min., lb./sq. in.	70,000	80,000	80,000	80,000	....
Yield point, min., lb./sq. in.	30,000	35,000	35,000	35,000	....
Elongation in 2-in., min., per cent	3	4	9	9	....
Stress for 1 per cent creep in 10,000 hours in lb./sq. in.:					
At 1,000° F.	11,600	14,000	14,000	14,000	....
1,100	9,000	10,900	10,900	10,900	....
1,200	6,000	7,500	7,500	7,500	....
1,300	3,850	4,650	4,400	4,650	....
1,400	2,500	3,600	2,880	3,600	....
1,500	2,150	3,100	2,480	3,100	....
1,600	1,800	2,600	2,080	2,600	....
1,700	1,500	2,100	1,680	2,100	....
1,800	1,200	1,600	1,280	1,600	....
1,900	.....	1,100	880	1,100	....
2,000	.....	600	480	600	....
Recommended allowable for surface loss, in./yr. (notes on design):					
At 1,600° F.	.003	.....	.....	.....	....
1,700	.005	.....	.....	.....	....
1,800	.007	.003	.003	.003	....
1,900	.....	.005	.005	.005	....
2,000	.....	.007	.007	.007	....

*Other elements such as molybdenum, tungsten, etc., shall be specified by the manufacturer. The test specimen shall be exposed to a temperature of 1,400° F. for 24 hours and furnace cooled to 400° F. prior to testing at room temperature.

Toughest Steel Known

HADFIELD'S manganese steel is universally accepted as the toughest moderately priced steel for structural purposes. It is the outstanding example of the use of austenitic steel—or iron in which the carbon is dissolved rather than present in the form of brittle iron carbide. Manganese makes it possible for carbon to dissolve in steel. Details of the properties and applications of this steel are given in Catalog 9 entitled, "Amsco Manganese Steel" of the American Manganese Steel Division, Chicago Heights, Ill. Quoting from this bulletin:

"Manganese steel, by reason of its toughness and work-hardening capacity, has long been a standard for resistance to wear and breakage with the makers and users of crushing and digging equipment. There is not a crusher, pulverizer, grinding mill, or power shovel manufacturer of importance in America that does not incorporate manganese steel parts to a greater or less extent in the units he manufactures.

"About a fourth of all the manganese steel castings made is bought by the railroads as trackwork crossings, frogs, switches, etc., but these castings are used widely for other services — notably in ditch-digging and road-grading equipment and in the equipment for drilling oil wells."

Properties of Manganese Steel Castings

The unique properties of Hadfield's manganese steel are due to the fact that the carbon is dissolved in the iron-manganese alloy, rather than present as distinct aggregates of iron carbide. Between 10 and 14 per cent of manganese is necessary to cause solubility of the carbon—and even in these amounts it is necessary to heat the steel at 1,850° F. and quench in water to obtain complete solution of the carbon. After such treatment, the physical properties are:

Tensile strength—120,000-130,000 lb. per sq. in.
Yield strength—30,000-40,000 lb. per sq. in.
Elongation in 2 in.—45-55 per cent.
Brinell hardness—185-200 (unworked).

However, these properties do not tell the whole story—the great ductility allows the metal to flow or deform readily upon impact—but the flow "sets" and the deformed metal hardens upon repeated blows. Thus, a polished, hard and wear-resistant surface soon results which greatly resists further wear or surface deformation and contributes to the life of other metals with which it makes wear contact. The extreme work-hardening that is evident in manganese steels also makes it necessary in most instances to use castings and to employ grinding as a method of finishing rather than machining.

Pertinent Services

Although much of the auxiliary machinery used in the petroleum industry employs manganese steel castings, there are three particularly extensive services. One of these is in the construction of drilling equipment, a second in road-building equipment and the third is trench-digging equipment.

Manganese steel is recommended for the following parts of drilling equipment.

1. Catheads.
2. Clutches.
3. Drive bushings.
4. Gears and pinions.
5. Drums—hoisting and winding.
6. Sprocket wheels.
7. Sheaves—casing block, crown block, sand-line, traveling block.

The following parts of road-building and trench-digging equipment are made of manganese steel:

1. Trench-machine buckets.
2. Sprocket wheels.
3. Dragline bucket lips.
4. Crawler rollers.
5. Dragline chain.
6. Hoisting and winding drums.
7. Trunnions, caps and links.
8. Scarifier jaws, plows, teeth.
9. Propelling cams.
10. Gears and pinions.

Metallurgical Terms

Sulfur

A nonmetallic element present in all commercial iron alloys as an impurity. In steels the maximum amount is generally limited to 0.05 per cent by specifications. In the so-called free cutting or screw stock steels it is permitted in amounts up to about 0.3 per cent to increase machineability. Sulfur causes red shortness in steel but its harmful effects can be controlled effectively by regulation of the manganese content.

Taken from A.P.I. Code No. 28.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph. D., Technical Editor

Analysis of Crude Oil From Freeman Field, Clare County, Michigan

Will you kindly furnish an analysis, if it is available, of the crude oil produced in the Freeman field of Michigan. I am told that this is an interesting type of oil because of the high-gravity and the low-octane rating of the gasoline obtained from it. Have you information about this?—I. B. C.

ANALYSIS OF FREEMAN FIELD OIL

Gravity, °A.P.I.	43.8
Color	Dark green
Odor	Sweet
Salt, lb./1,000 bbl.	10
Sulfur, total per cent	0.368
Distillation, dry	°F.
Initial boiling point	86
Per cent off:	
10	208
20	278
30	352
40	416
50	488
60	551
70	598
80	645

The 300° end-point gasoline, tested 47-octane value, represented 24 per cent of the oil. The analysis indicates a yield of about 38 per cent of 400° end-point gasoline.

The analysis indicates a paraffin oil. Oils of this type usually yield a straightrun gasoline of low-octane rating. Cracking, with polymerization, produces a motor fuel of much higher antiknock rating.

Extremely Low Pour-Point Light-Viscosity Lubricating Oils

We have an inquiry for an oil to meet the attached specifications. The extremely low pour point appears unusual for the stated viscosity and gravity. Will you kindly advise us as to just how low does the pour point run on light lubricating oils of this type?—W. T. L.

The requirements of this oil are: Gravity A.P.I. 27°-30°; flash, approx. 290° F. min.; viscosity (Saybolt Universal) at 100° F. 58.70; pour point 65° to 75° F.

The pour point of a lubricating oil depends on the type of crude oil from which it originates, the refining method, and modification by the use of additives, known as pour-point depressants. It is most difficult to make a very low pour-point oil from paraffin-base oils because of the large quantity of wax present, which has to be thoroughly removed by the refining operations. The coastal oils, free from wax, yield lubricating oils by proper treatment which are noted for retaining fluidity down to remarkably low temperatures. Viscosity is often related to pour point to the extent that low-viscosity oils may be quite easily manufactured with lower pour points than the oils of high viscosity.

All liquids solidify at some temperature. The pure hydrocarbons of the liquid type have relatively high-melting points; octane, for example, with only eight carbon atoms, melts at —76° F. This compound has no lubricating value, and, as the melting point of the hydrocarbons increases with molecular weight, it is clearly apparent that the compounds constituting lubricating oil, most of them exceeding 30 carbon atoms, have a normal pour point much higher than —76° F. Rossini states: "Although no definite pure hydrocarbons have ever been isolated from the lubricating oil fraction of petroleum the information . . . indicates that the hydrocarbon constituents of the better or more highly refined lubricating oils may include (1) naphthenes having one or two rings per molecule and long-branched side chains; and, possibly, (2) branched-chain paraffins."

Oils having a viscosity below 70 at 100° F. cannot be classified as excellent lubricants under normal conditions. The oil indicated is probably intended for very low-temperature service, such as for airplanes operating at high altitudes and for lubricating special mechanisms. The low pour point, —65° to —75° F., is extreme, no natural lubricating oil is now marketed which tests below this temperature for pour point.

There are several additives available for depressing pour point and others for improving viscosity index of lubricating oils.

References: Kalichevsky, Modern Methods of Refining Lubricating Oils, pp. 168 and 179. Frederick D. Rossini, Fundamental Research on the Chemical Constitution of Lubricating Oil, A.P.I. Research Project 6, A.P.I. meeting, Tulsa, May 15, 1935.

Viscosity of Illinois Oil

We are interested in obtaining the viscosity, Saybolt seconds, at various temperatures, of Illinois crude oil and would appreciate any information.—O. W. S.

All of the recently produced oil of Illinois has a gravity ranging from 38° to 40° A.P.I. with the Saybolt Universal viscosity at 100° F. falling between 39 and 41.7 seconds.

A sample of the oil from the McClosky lime is reported to have tested 39 seconds viscosity with a pour point of —10° F. Another sample of the same oil, but from another well, tested 41 seconds viscosity and pour point —35° F. Most of the reports show the viscosity at 41 seconds at 100° F.

The viscosities of Illinois oil at other temperatures than 100° F. are not available. Special tests should be made of the oil at the desired temperatures.

Physical and Chemical Laws and Principles Used in the Petroleum Industry

LAW OF HESS FOR HEAT DEVELOPMENT

The heat generated by a chemical reaction is the same if the change takes place over a long period or is instantaneous; or is made in one step or several. Starting with identical materials and ending with the same final substance, the quantity of heat produced, regardless of the process, is always exactly the same.

Example.—When pure lime oxide and hydrochloric acid, in dilute solution react there are 46 calories produced. When pure lime is hydrated 15 calories result; reducing the hydrated lime to solution produces 3 calories; the reaction between the solution, lime water, and dilute hydrochloric acid evolves 28 calories. The total is 46 calories.

Phosphate Process for Removing Hydrogen Sulfide From Gas, Etc.

Will you please furnish an outline showing the essential principles of the operation of the phosphate process for removing hydrogen sulfide from gas and liquids?—C A. H.

A clear description of the tripotassium phosphate process for hydrogen sulfide removal from gases and liquids has been given in Heat Engineering and the outline here has been arranged from this source.

This process is based on absorption of hydrogen sulfide from both gases and liquids by washing with aqueous solutions of tripotassium phosphate. The hydrogen sulfide is subsequently stripped from the salt solution by boiling and the treating solution regenerated.

When treating large volumes of gas with high H_2S content, the sulfur may be recovered either as hydrogen sulfide, or by conversion to sulfur or sulfuric acid. If recovery of sulfur is not desired, the vented sulfide gas may be burned.

The absorption reaction is reversible:

$$H_2S + K_3PO_4 \rightleftarrows KSH + K_2HPO_4$$

Direction being controlled by temperature while the driving power depends on the ratio of tripotassium phosphate to potassium acid sulfide.

The treating medium, tripotassium phosphate, is a stable solution with specific gravity 1.2 to 1.5. Basic ingredients for its manufacture are caustic potash and phosphoric acid. They are used in the ratio of about 3 mols of KOH per mol of H_3PO_4. The solution is easily made, and is not poisonous, volatile, corrosive or inflammable.

Treatment of gases.—Gases are exposed to intimate contact in a scrubber tower, first a strong phosphate solution then with a weak solution. The foul solution is regenerated by boiling, which dispels the H_2S and regenerates the treating solution. The heat evolves hydrogen sulfide and water vapors. These combined vapors are then separated in a stripper; H_2S is vented at the top and water collected at the bottom. Water is returned to be used again in making the weak treating solution.

Treatment of liquids.—Liquids containing H_2S are first treated with a partially spent solution in a mixer, then separated, treated a second time with freshly generated solution, separated again and withdrawn from the system. Only freshly regenerated phosphate solution is used for the final contact in the second-stage contactor and the fresh charge is treated only with partially spent solution. Part of the treating solution may be recycled.

The process is designed for continuous operation when treating either gases or liquids.

References: Heat Engineering, June 1939, p. 82. U. S. Patents 1945163; 2110403; 2157879 to Shell Development Co.

Questions on Petroleum Technology may be sent to Dr. Charles K. Francis, The Oil and Gas Journal, Tulsa, Okla. When a copy of the answer is desired, postage should be included.

YOUR FIRST LINE OF DEFENSE

Against high lifting costs

THE best way to keep pumping costs low is to use an efficient, dependable unit of the right type and size for each particular job. "Oilwell's" line is complete and meets any operating condition.

"Oilwell" pumping units are ruggedly designed to operate for long periods of time. All bearings and gears are mounted in weatherproof and oil-tight enclosures that assure effective lubrication. High mechanical efficiency is obtained by the use of precision-machined, heat-treated gearing and tapered roller bearings in the speed reducer.

OIL WELL SUPPLY COMPANY

Branch Stores at all Oil Fields

"Oilwell"

Subsidiary of United States Steel Corporation

FIELD OPERATIONS

Summarizing the Week's Developments

OKLAHOMA—Wildcat near Jones, Oklahoma County, found production in Cleveland sand to open a pool. The Wilzetta area in Lincoln County was revived with completion of a 1,618-bbl. high-gravity oil well. Deep wildcat tests were started in Dewey County, western Oklahoma, and near Guthrie townsite, Logan County.

KANSAS—The Wherry pool in Rice County was extended ¾ mile northwestward and to within 6 miles of the town of Lyons. Cunningham gas production in Kingman County was extended ½ mile southwestward. Arbuckle-lime production was uncovered in the North Fairfield pool, Russell County, where other production is from Lansing lime.

LA-ARK-TEX—The Golden Meadows field in coastal Louisiana had a larger-than-usual well in the 5,300-ft. sand, which produced 2,600 bbl. initially. North Louisiana and Arkansas operators are keeping close watch on the Yazoo City, Miss., area where Union Producing Co. has two wells close to completion which will have much significance in relation to the size and importance of the field opened by the Union company.

TEXAS—Eastern Texas wildcat operations are growing in importance. The newly assembled Shell Oil Co., Inc., block of 18,867 acres in Trinity, Walker and Houston counties lies close to the Trinity pool. Wildcats were started in Angelina and Hunt counties. A prospective distillate pool and a dry-gas field in Goliad County were reported from Southwest Texas. Pool extensions and new wildcat tests in West Texas and 50 new locations made in that district were principal events of the week. Central Texas pools of importance are nearly drilled up. The new basal-lime discovery in Nolan County is expected to influence some drilling.

NEW MEXICO—A new shallow-sand pool is in prospect in northern Eddy County. Nine new oil wells in that county produced 3,522 bbl. initially.

WYOMING—The Wertz dome in Carbon County was given another big well when an old producer was deepened in the Tensleep sand, the well yielding 3,607 bbl. in 24 hours.

ILLINOIS—A 4,200-bbl. well in the Sandoval Devonian-lime pool and drop of about 10,000 bbl. a day in production in the state were the main features of the week. One company cut its runs about 10,000 bbl. a day in the Salem field, but the reduction is believed to be only temporary. Fifty-three new oil wells were added in the state, but the 26 dry holes were an unusually large number.

INDIANA—Papoose Oil Co. completed a 3,200-bbl. well in Gibson County and another well on the same lease good for 125 bbl. in 10 hours.

MICHIGAN—Forty-five permits to drill in Michigan in a week in which only 31 wells were completed further indicates the steady growth of field work in the state. A 1,200-bbl. well in Clare County and a number of even better producers in Kent County led the completions.

Completions in All Fields

(Week Ending October 7, 1939)

	Oil	Gas	Dry	Total	1939 total comp. to date	1938 total comp. to date
N. Y., Pa., and W. Va.	50	14	6	70	2,475	2,850
Ohio	7	8	13	28	765	766
Indiana	5	1	4	10	231	71
Kentucky	2	0	4	6	515	698
Illinois	53	0	26	79	2,743	1,227
Michigan	16	1	12	29	1,093	682
Kansas	18	2	6	26	1,006	1,248
Oklahoma	11	1	15	27	1,363	1,342
Texas:						
North Central Texas	22	0	10	32	1,813	2,470
West Texas	40	0	2	42	1,437	1,533
Texas Panhandle	9	3	0	12	320	440
East Texas	3	0	0	3	323	1,485
East Central Texas	1	0	1	2	208	276
East Texas Border	1	0	0	1	56	109
Gulf Coast Texas	18	1	7	26	1,030	1,030
Southwest Texas	26	5	6	37	1,729	1,627
Total Texas	120	9	26	155	6,916	8,970
North Louisiana	5	1	4	10	403	503
Gulf Coast Louisiana	12	0	5	17	490	375
Total Louisiana	17	1	9	27	893	878
Arkansas	1	0	2	3	201	187
Montana	2	1	2	5	123	82
Wyoming	2	0	3	5	97	121
Colorado	0	0	0	0	10	10
New Mexico	19	0	2	21	458	436
Utah	0	0	0	0	0	2
California	16	0	3	19	714	1,013
Total United States	339	38	133	510	19,603	20,583
Total previous week	350	38	109	497		
Week ending Oct. 8, 1938	353	28	120	501		

Outstanding Fields—Highlights

(Week Ending October 7, 1939)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
K.M.A.	31	39	3	2,426	1,139	20,750
Wasson-Bennett	19	61	14	12,658	453	20,268
Ector County	13	61	9	7,003	1,856	44,150
Pecos County	11	27	6	977	1,194	31,000
Jones County	5	9	4	824	572	6,000
East Texas	12	23	3	75	26,091	394,598
OKLAHOMA						
St. Louis	4	25	1	56	891	26,250
KANSAS						
Barton County	4	12	1	189	488	12,235
Ellis County	3	14	2	2,309	432	5,840
Rice County	4	17	3	275	1,369	23,975
Russell County	5	24	6	2,429	1,328	17,510
NEW MEXICO						
Lea County	8	52	7	1,952	2,260	99,260
Eddy County	7	58	9	3,522	432	11,330
LA-ARK-TEX						
Cotton Valley, La. (deep)	0	7	0	0	142	9,820
Magnolia, Ark.	1	10	1	410	68	16,525
MICHIGAN						
Freeman-Redding	3	15	2	337	115	13,406
Kent County	12	48	9	6,410	154	9,544
CALIFORNIA						
Wilmington	1	16	2	845	71	86,750
ILLINOIS						
Salem	9	88	12	5,520	1,340	190,375
Louden	10	66	16	4,934	1,111	64,800
Other basin fields	35	257	25	4,093	1,701	68,540
Old fields	....	.....	....	.....	.....	9,000

Illinois, Indiana and Kentucky

By STAFF CORRESPONDENT

Finish 4,200-Bbl. Well in Devonian Lime at Sandoval

MATTOON, Ill., Oct. 9.—New operations in the past week in Illinois fell far behind those of the previous week when 120 new starts were made. Only 61 first reports of new work were announced last week, including 12 in Fayette County, 5 in Clay, 4 in Richland, 3 in Lawrence, 1 each in Madison, Perry, Edwards, and Hamilton, 13 in Marion, 4 in Jefferson, 8 in Wabash, 3 in Wayne, and 5 in White County. Only eight wildcats were started. During the week there were 53 new oil wells completed and 26 dry holes abandoned, a total of 79 completions.

Nine new oil wells in Wabash County recorded 1,157 bbl. of initial production, but there were six dry holes in the county. Wayne had two wells and 255 bbl. of new production; Marion, 12 oil wells, 5,520 bbl. initial production, the figure being brought thus low by the fact that all of the Texas Co.'s completions were, as usual, only gaged 3 hours on the first day. Washington's 4 new oil wells registered 287 bbl.; Fayette County's 16 new oil wells 4,934 bbl. initial output; White County completed 2 oil wells with 573 bbl.; Clay County 6 wells with 1,802 bbl.; Lawrence County one 3-bbl. well, and Edwards a 16-bbl. well and 2 dry holes. Fayette County had four dry holes, Marion County four, Washington County one, St. Clair County two, Clay County three, Montgomery, Clark, and Lawrence counties one each.

The Devonian-lime pool in the old Sandoval field north of the city of Centralia recorded the largest well of the week. It started at 4,200 bbl. a day.

Production in Illinois based on runs from leases dropped from an average of 344,267 bbl. per day to 332,715 bbl. per day in the past week. The big drop was in the Salem field in Marion County, where Texas Co. is said to have reduced its pipe-line runs about 10,000 bbl. per day. The fall in production figures is regarded as temporary.

Wabash County

In Wabash County C. D. Neff's No. 1 Litherland, SW SW NW Section 8-1n-12w, McClosky lime at 2,406-15 ft., total depth, dry and abandoned. Vickers and others' No. 2 Bump, NW NE SW Section 9-2s-13w, Cypress sand at 2,417-41 ft., pumped 206 bbl. H. Fotiades' No. 1 Lovellette, NE cor. NW NE NW Section 16-2s-13w, Cypress sand at 2,449-60 ft., pumped 170 bbl. Yingling & Hayes' No. 1 Woods, C NW NE Section 4-2s-13w, Fredonia top at 3,047 ft., total depth 3,095 ft., dry and abandoned. Chet Everts' No. 1 Bump, SE cor. SW SE NW Section 4-2s-13w, Cypress sand at 2,434-36 ft., total depth 2,463 ft., dry and abandoned. Continental Oil Co.'s No. 1 Schuh, NE cor. SE SE SW Section 30-2s-13w, Cypress sand top at 2,479 ft., total depth 2,547½ ft., dry and abandoned. The location for Dennis' No. 1 Griess, C E½ SW NE Section 24-2s-14w, was abandoned. Southern Illinois Refining Co.'s No. 1 Garrett, SW SE SW Section 9-2s-13w, Cypress sand at 2,451-64 ft., shot with 10 qt., pumped 100 bbl. Davis' No. 1 Bruner, NW cor. SW SW SW Section 9-2s-13w, Cypress sand at 2,429-64 ft., shot with 5 qt., pumped 52 bbl. Pearson's No. 1 Sheffield, SE NE SW Section 9-2s-13w, pumped 150 bbl. Knight & Self's No. 1 Elkins, SW cor. SE¼ Section 20-2s-13w, Cypress sand at 2,478-88 ft., pumped 250 bbl. Olin and others' No. 8 Schultz, NE NW NE Section 31-2s-13w, Cypress sand at 2,466-76 ft., water in bottom, plugged back to 2,473 ft., pumped 10 bbl. of oil and 20 bbl. of water. F. M. Blair and others' No. 1 Truscott, NW cor. SE SW Section 9-2s-13w, Cypress at 2,447-57 ft., pumped 167 bbl. Burton & Duncan, NE cor. NW SE SW Section 9-2s-13w, Cypress sand at 2,439-60 ft., pumped 175 bbl. Dallas Hawkins and others' No. 1 Cowling, SE NE SE Section 18-2s-13w, Cypress sand at 2,434-39 ft., shot with 60 qt., pumped 27 bbl. of oil and 14 bbl. of water. J. W. Carter and others' No. 1 Sergert, SW NW NE Section 10-3s-14w, McClosky lime at 2,984-3,000 ft., dry and abandoned.

In Wayne County Illinois Mid-Continent Oil Co.'s No. 2 Puckett, SE SE NW Section 18-2s-8e, pay at 3,383-93 ft., acidized with 6,000 gal., flowed 245 bbl. Anding and others' No. 1 Osborne, NW NE NW Section 2-3s-8e, pay at 3,395-97 ft. and 3,399-3,402 ft., acidized with 1,000 and 2,000 gal., pumped 10 bbl.

In Marion County Ray Farrier's No. 1 Balke, SW SW SW Section 21-4n-4e, a wildcat, was dry and abandoned at 2,419 ft. Fredonia lime was topped at 2,325 ft.

In the Salem pool in Marion County Texas Co.'s No. 8 Frederich, SE NW NW Section 29-2n-2e, McClosky lime pays at 2,012-66 ft., flowed 134 bbl. in 3 hours, rated at 938 bbl. a day. Texas' No. 15 W. Frederich-A, SE NW SW Section 29-2n-2e, McClosky lime at 1,921-28 ft. and 1,950-68 ft., flowed 45 bbl. in 3 hours, rated

(Continued on Next Page)

3,200-Bbl. Well in Gibson County Feature in Indiana

EVANSVILLE, Ind., Oct. 9.—Papoose Oil Co. of Tulsa, had the banner completion of the week in the Indiana fields, when its No. 3 Cooper in Section 13-3s-14w flowed 337 bbl. in 2½ hours, or at the rate of 3,200 bbl. a day. The company also got a well on the Cooper lease that flowed 125 bbl. in 10 hours. Completions in the state last week numbered 10, 5 of which were oil wells, 1 a gas well and the other 4 dry holes in outlying counties.

Gibson County

In Gibson County Midwest Development Co.'s No. 2 Erdell, NW cor. SE SW SW Section 23-2s-9w, sand at 1,467-74 ft., pumped at rate of 3 bbl. of oil per hour. Thomas & Lacey and others' No. 5 Cooper, SE cor. SW SW SW Section 18-3s-13w, shot with 20 qt. at 2,075-85 ft., flowed 250 bbl. in 24 hours. Lewis Production Co.'s No. 4 Cooper B, SE SE NE Section 12-3s-14w, shot with 30 qt. at 2,515-32 ft., pumped 50 bbl. in 8 hours. Fitzpatrick & Bander's No. 5 Cooper, NW NW NE Section 13-3s-14w, sand at 2,867-75 ft., flowed 240 bbl. naturally in 24 hours. Papoose Oil Co.'s No. 1 Cooper, SW SE SW Section 13-3s-14w, sand at 2,506-17 ft., flowed 125 bbl. in 10 hours through ⅝-in. choke. Papoose Oil Co.'s No. 3 Cooper, SW SW SW Section 13-3s-14w, Cypress sand at 2,474-2,504 ft., flowed 337 bbl. in 2½ hours, or at the rate of 3,200 bbl. a day. The flow was through open 5½-in. casing.

Twenty-seven rigs and wells drilling were visited in Gibson County during the week. Shirley and others were rigging up standard tools in No. 1 McRoberts, NE cor. SE NW NE Section 7-1s-9w. Jack Brown and others' No. 1 Welborn, SE SE NW Section 27-2s-12w, drilling at 1,980 ft. after having found Waltersburg and Tar Springs sands dry. Hullman and others made a location for No. 1 Hollis, SE SW NW Section 36-2s-11w. Lane, Gray and others' No. 1 McCarthy, NW SE NW Section 13-2s-11w, an old well plugged back from 2,205 ft., shot with 20 qt. in sand at 1,812-21 ft., shot believed to have burned the sand and the well bailed only small showing of oil and water. Midwest Development Co.'s No. 3 Erdell, SE SW SW Section 23-2s-9w, sand at 1,467-78 ft., set 4½-in. casing at 1,467 ft., not yet tested.

Midwest's No. 1 Bryant, SW NW NE Section 15-2s-9w, drilling below 150 ft. Schueller & Whitlock's No. 1 Kohlmeier, NW SW SE Section 14-3s-9w, shut down at 991 ft. Ray Ryan and others' No. 1 Skiles, SW NW NE Section 18-3s-13w, total depth 2,576 ft., shut down for orders. Huddleston and others' No. 2 Jolly, SW cor. SE SE NW Section 18-3s-13w, rig up. Hollandsworth & Bander's No. 18 Cooper, SE cor. NW SE SE Section 12-3s-14w, Cypress sand at 2,490 ft., cored from 2,492 to 2,508 ft., recovered 4 ft. of shaley sand; 8 ft. of saturated sand, and 4 ft. of sandy shale; set 5½-in. casing at 2,490 ft. and waiting for cement to set. Continental Oil Co.'s No. 5 Cooper, SW SW SE Section 12-3s-14w, McClosky lime at 2,876 ft.; 600 ft. of water in the hole from 2,876-77 ft., fishing for lost tubing. Owner intends to plug back. Hollandsworth & Bander's No. 19 Cooper, NW cor. Section 19-3s-13w, drilling below 1,100 ft. Hollandsworth & Bander's No. 4 Cooper-Boone, NE SW NE Section 13-3s-14w, Cypress sand at 2,483-2,518 ft., Ste. Genevieve lime top at 2,772 ft., 7-in. casing set at 2,828 ft., total depth 2,862 ft., rigging up standard tools. Fitzpatrick & Bander's No. 4 Cooper, NW SE NW NE Section 13-3s-14w, shut down at 2,870 ft.

Papoose Oil Co.'s No. 1 Cooper B, NE SE SW Section 12-3s-14w, Cypress sand at 2,487 ft., total depth 2,505 ft., set 5½-in. cashing at 2,489 ft., drilling plugs. Lewis Production Co.'s No. 3 Cooper D, NE NE NW Section 13-3s-14w, drilling at 2,740 ft., Cypress sand at 2,493-2,502 ft., not tested. Hollandsworth & Bander's No. 17 Cooper, NW NE NE Section 13-3s-14w, sand at 2,861-68 ft., total depth 2,878 ft., well shut in without a test. Lewis Production Co.'s No. 4 Cooper D, NW cor. NE SE NW Section 13-3s-14w, sand at 2,116-38 ft., hole full of oil, but will not flow; will put on pump. J. F. Amis, Jr.'s No. 5 Cooper-Amis, NW cor. SW NE NE Section 24-3s-14w, Hardensburg sand at 2,291-2,303 ft., saturated, drilling at 2,465 ft.

Continental Oil Co.'s No. 5 Bozeman, NW NW NW Section 24-3s-14w, set 8⅝-in. casing at 270 ft. (first report). Joe Bander and others' No. 2 Cooper, NE cor. Section 24-3s-14w, cored 14 ft. of saturated sand, total depth 2,088 ft., set 7-in. casing at 2,067 ft., waiting for cement to set. Hollandsworth & Bander's No. 20 Cooper, SE NE NW NE Section 24-3s-14w, rigging up rotary (first report). Hollandsworth, McCullough and others' No. 1 Cooper, SE cor. NW SE NE Section 24-3s-14w, spudded. Lewis Production Co.'s No. 3 Cooper C, NW SE NW Section 24-3s-14w, drilling at 300 ft. (first report). Gwin Drilling Co. and others' No. 1 Julian, NE cor. SE¼ Section 26-3s-14w, shut down for orders at 2,952 ft. Continental Oil Co.'s No. 1 Keck, SE SE SE Section 27-3s-14w, Cypress sand at 2,499 ft., total depth 2,519 ft., estimated good for 35 bbl. per hour, shut in, building storage. Misener & Baldwin's No. 1 New Harmony Bank, SW cor. SE NW Section 27-3s-14w, drilling below 1,925 ft.

Knox County

In Knox County T. J. Boyce and others' No. 1 Purcell, Donation 224, Township 2n-8w, was dry and abandoned at 3,001 ft. Newton Pipe Line Co.'s No. 1 Like,

(Continued on Page 100)

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at 315 bbl. a day. Texas' No. 7 Sands, NE NW SW Section 33-2n-2e, McClosky at 2,046-75 ft., acidized with 2,000 gal., flowed 45 bbl. in 3 hours, rated at 315 bbl. a day. Texas' No. 3 J. Hamlin, NE NW NE Section 4-2n-2e, McClosky at 2,129-34 ft., pumped 36 bbl. in 3 hours, rated at 252 bbl. a day. Magnolia Petroleum Co.'s No. 6-A Shanafelt, NW NW NW Section 21-2n-2e, shot with 140 qt. at 1,775-1,805 ft., total depth 1,880 ft., pumped 84 bbl. Texas Co.'s No. 7 R. Frederich, NE SW NW Section 29-2n-2e, McClosky at 2,020-55 ft., acidized with 2,000 gal., pumped 41 bbl. in 3 hours, rated at 287 bbl. a day. Texas' No. 3 Fisher, NW NE NE Section 4-2n-2e, McClosky at 2,134 ft., pumped 25 bbl. in 3 hours, rated at 175 bbl. a day.

Texas Co.'s No. 8 Snider, NE NW SE Section 8-1n-2e, McClosky lime at 2,058-94 ft., acidized with 3,000 gal., pumped 24 bbl. in 3 hours, rated a 168-bbl. well. Texas' No. 4 Tate, NE SW NE Section 7-1n-2e, shot with 100 qt. in Aux Vases sand at 1,757-1,857 ft., flowed 160 bbl. in 3 hours, rated at 1,120 bbl. a day. Texas' No. 6 Farthing C, SW cor. NW SE Section 4-1n-2e, Benoist sand at 1,765 ft., total depth 1,836 ft., pumped 6 bbl. in 3 hours, rated at 42 bbl. a day. Lickey and others' No. 1 Adams, NE SW NW Section 3-1n-1e, McClosky at 1,973-2,021 ft., dry and abandoned.

Big Well in Devonian Lime

In the Sandoval field Max Pray's No. 3 Robinson, SE cor. SW SE SW Section 4-2n-1e, Devonian lime at 2,949 ft., pay at 2,983-85 ft., flowed 4,200 bbl. naturally. Menhall and others' No. 1 Robinson, S½ NW SE SW Section 4-2n-1e, Devonian lime top at 2,949½ ft., pay at 2,986-89 ft., acidized with 1,000 gal., flowed 720 bbl. Miller & Murdock's No. 1 Frederich, SE cor. NE SE Section 36-2n-1e, dry and abandoned at 2,259 ft., Benoist sand topped at 1,898 ft., McClosky lime missing.

Fred McCoy's No. 1 McFadden, in S½ SE NW NE Section 9-2n-2e, McClosky lime top at 2,169 ft., total depth 2,220 ft., acidized with 1,000 gal., dry and abandoned. Chris Pierson's No. 1 Johnson strip, NW cor. SE NE Section 16-2n-2e, total depth 1,200 ft., reported abandoned.

In St. Clair County McIlwain's No. 1 McNulty, SW SW SE Section 32-2n-7w, Devonian lime at 1,566 ft., total depth 1,734 ft., dry and abandoned. Pennington & Dunn's No. 1 Schoene, SE SE NE Section 2-1n-6w, dry and abandoned at 2,050 ft.

Washington County

In Washington County Ohio Oil Co.'s No. 1 Miller, NE NE SE Section 22-3s-3w, Benoist pay at 1,290-98 ft., shot with 9 qt., pumped 114 bbl. in 21 hours. Lilly and others' No. 2 Kozuszek, SE NW SW Section 23-3s-3w, Benoist sand at 1,278-83 ft., shot with 10 qt., pumped 85 bbl. Shell Oil Co., Inc.'s No. 4 Sharkowski, SE NE NW Section 23-3s-3w, Benoist at 1,249-77 ft., shot with 21 qt., pumped 48 bbl. Magnolia Petroleum Co.'s No. 8 Kurwicki, SE NE NE Section 22-3s-3w, McClosky lime at 1,466-76 ft. and 1,490-1,501 ft., total depth 1,550 ft., dry and abandoned. Magnolia's No. 2 Barcewski, SE SE NE Section 15-3s-3w, Benoist at 1,252-66 ft., shot with 12 qt., pumped 40 bbl.

Fayette County

In Fayette County, Louden field north end, Wesley Hayes' No. 2 Thull, NE SW SE Section 14-8n-1e, dry and abandoned at 880 ft. Stewart Oil Co.'s No. 2 Logue, SW NW NE Section 34-8n-3e, dry and abandoned at 1,577 ft., Cypress sand tops at 1,458 ft. and 1,490 ft. Carter Oil Co.'s No. 5 Watson, NW NE SW Section 33-8n-3e, total depth 1,584 ft., shot with 15 qt. and 40 qt., swabbed 892 bbl. Carter's No. 10 Ireland, NE NW NW Section 33-8n-3e, total depth 1,528 ft., shot with 40 qt. and 10 qt., flowed 564 bbl. Carter's No. 6 M. Miller, NW SW SE Section 28-8n-3e, swabbed 316 bbl. Carter's No. 3 E. Marshall, SE NE SW Section 28-8n-3e, total depth 1,581 ft., shot with 20 qt., flowed 468 bbl. Carter's No. 2 M. Durbin, NW NE NE Section 28-8n-3e, total depth 1,497 ft., shot with 20 qt., flowed 228 bbl. Carter's No. 2 Blankenship, SW NW SE Section 28-8n-3e, total depth 1,588 ft., shot with 20 qt., flowed 246 bbl. Carter's No. 1 Earl Rhodes, NW SW SW Section 23-8n-3e, total depth 1,521 ft.

Carter Oil Co.'s No. 2 G. Walker, SW SE NW Section 21-8n-3e, total depth 1,560 ft., shot with 20 qt., flowed 138 bbl. of oil and 250,000 cu. ft. of gas. Carter's No. 3 Hogan, NW SW SE Section 21-8n-3e, total depth 1,503 ft., shot with 20 qt., flowed 78 bbl. of oil and 1,800,000 cu. ft. of gas. Carter's No. 1 Mae Taylor, SW SE NW Section 12-8n-3e, total depth 1,542 ft., plugged back to 1,532 ft. and shot with 20 qt., swabbed 340 bbl. through casing. Carter's No. 2 Sinclair, NE NW SE Section 2-8n-3e, total depth 1,607 ft., shot with 10 qt. and 40 qt., pumped 200 bbl.

J. Hausman and others' No. 1 Neathry, NW NW SW Section 29-7n-1w, a wildcat, McClosky lime top at 1,435 ft., total depth 1,492 ft., dry and abandoned.

Texas Co.'s No. 5 L. O. Wooten, C S½ S½ Section 31-7n-3e, in the southern end of the Louden field, total depth 1,285 ft., completed as a salt-water disposal well. Shell Oil Co., Inc.'s No. 1 Jedemski, NW SE SW Section 21-7n-3e, total depth 1,581 ft., 4, 6, and 11-qt. shots, pumped 120 bbl. in 21 hours. Union Products Petroleum Co.'s No. 4 Morrison, NE cor. SW SW Section 8-7n-3e, shot with 40 qt. at 1,472-90 ft. (Weiler sand), swabbed 456 bbl. Carter Oil Co.'s No. 7 Hopper, NW NW NW Section 8-7n-3e, total depth 1,528 ft., 10-

(Continued on Page 88)

WESTERN KENTUCKY

OWENSBORO, Ky., Oct. 9.—Twelve new operations were started in western Kentucky fields in the past week, while only two oil wells were completed, together with four dry holes. The oil wells were good for 92 bbl. and 40 bbl., respectively. Following are the details on completions and new work:

Butler County, Silver City district, Harry Wheeler's No. 2 Birdie Cooper, rigging up. Mount Zion School district, South Penn Oil Co.'s No. 1 E. R. McPherson, moving in.

Daviess County, Handyville district, Master Oil Co.'s No. 2 Price Baird heirs, rigging up; A. Teller, trustee's No. 1 B. E. Conner, pumped 92 bbl. in 24 hours from Jett sand, total depth 1,257 ft.; Petroleum Co.'s No. 2 Ed N. Howard, spudding in. Utica district, C. E. Daugherty's No. 3 Rex O'Flynn, rigging up to drill deeper from Jett to Jones sand, old total depth 1,095 ft.; Stewart, Snyder, and Major Oil Co.'s No. 2 Dr. A. A. Westerfield, pumped 40 bbl. per day from McClosky lime, drilled 1 ft. in, total depth 1,712½ ft. Pleasant Ridge district, General Drilling Co.'s No. 4 Tassie Church, reported as dry at 1,047 ft.; crew is cleaning out and may drill deeper. Whitesville district, Vickers and Coffee's No. 2 F. and J. Foor, dry hole at 602 ft. Cane Run School district, Cane Run Petroleum Co.'s No. 13 R. E. Jackson, rigging up. Sutherland district,

(Continued on Page 98)

NATIONAL BANK OF TULSA

TULSA, OKLAHOMA

Statement of Condition October 2, 1939

RESOURCES

Cash and Due from Banks	$ 33,619,233.17	
U. S. Government Securities	14,650,295.26	
Other Bonds and Warrants	6,040,669.38	$ 54,310,197.81
Loans and Discounts		$ 16,645,348.40
Overdrafts		1,432.96
Income Receivable Accrued		151,554.75
Stock in Federal Reserve Bank		180,000.00
Bank Premises		3,104,166.66
Customers' Liability under Acceptances		2,704.50
TOTAL		$ 74,395,405.08

LIABILITIES

Deposits		$ 67,570,890.54
Acceptances Executed		2,704.50
Income Collected not Earned		52,892.00
Reserve for Interest, Taxes, Etc.		49,969.58
Reserve for Preferred Dividends		7,666.66
Capital—Preferred	$ 1,000,000.00	
Capital—Common	2,500,000.00	
Surplus	2,500,000.00	
Undivided Profits and Reserves	711,281.80	6,711,281.80
TOTAL		$ 74,395,405.08

The Oil Bank of America

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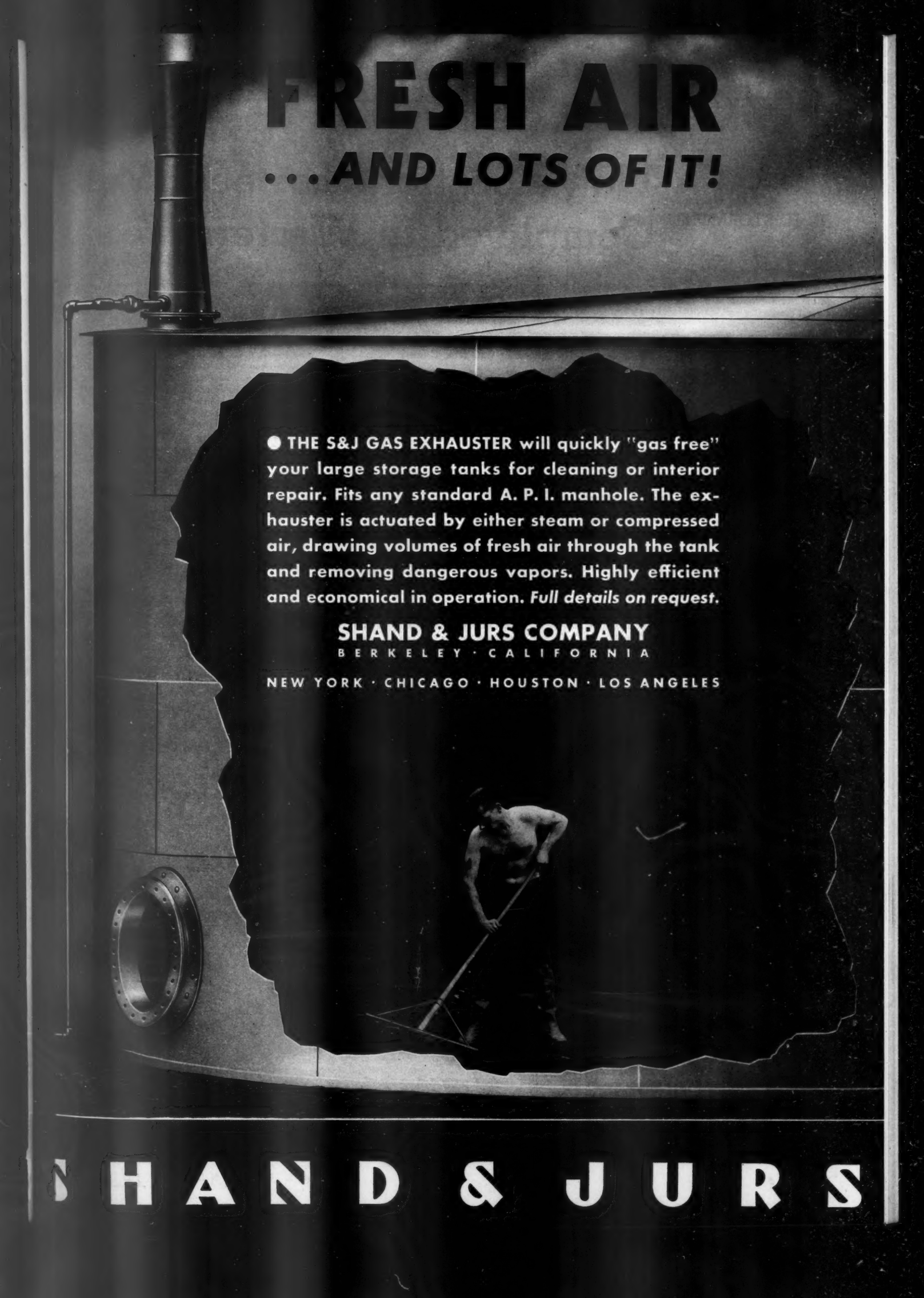
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New Locations Exceed Wells Completed in Western Texas

By
D. H. STORMONT

MIDLAND, Tex., Oct. 9.—Two new wildcat locations in the North Permian basin, and continued testing of several prospective pool extensions in the South basin, featured a rather uneventful week in the West Texas district. New completions and new locations continued their rapid pace for the past week. Fifty locations staked and 43 wells were completed of which 40 were oil wells, 2 dry holes and 1 a deepening job.

In the Wasson-Bennett field in Gaines and Yoakum counties a wildcat location was made and a closely watched Bennett-pool northeast outpost was abandoned. The wildcat location was Sloan & Zook and T. N. Sloan's No. 1 Mrs. J. E. Fitzgerald, SE cor. Section 22, Block D, J. H. Gibson Survey. Although in Yoakum County it is considered a southwest outpost to the Slaughter pool of Hockley County and a southeast outpost to the Duggan pool of Cochran County. It is located in the extreme northeastern corner of Yoakum County and almost on the four-corner point of Yoakum, Hockley, Cochran and Terry counties. It is 2 miles southeast of the Texas Co.'s No. 1 Mallett, an extreme southwest edge producer in the Slaughter pool. Contract depth is 5,500 ft.

Cochran County was given a new wildcat when Atlantic Refining Co. started digging cellar and pits for No. 1 H. T. Boyd, 580 ft. from the south and west lines of Labor 11, League 56, Oldham County School Lands. Contract depth is 5,400 ft. The location is 2¼ miles northeast of the Texas Co.'s No. 1 H. T. Boyd, 404-bbl. well, an east extension to the Duggan pool of that county. Another deep wildcat in the county, Humble Oil & Refining Co.'s No. 1 Westheimer & Daube, Labor 1, League 146, Stonewall County School Lands, was last reported drilling below 6,845 ft. on a deep contract to the Ellenburger formation.

On the extreme northeastern corner of the Bennett area of Yoakum County, Fred M. Allison has abandoned as dry No. 1 D. T. Bush, Section 629 and between the Bennett and Waples-Platter areas. The test was quit at 5,462 ft. after topping the anhydrite at 2,570 ft., brown lime at 4,300 ft., the solid lime at 4,865 ft., and recovering only slight showings of oil from 5,400 to 5,410 ft. The outcome of this test has led some operators to regard the Waples-Platter area apart from the Bennett pool. Formations in the Wasson-Bennett field proper dip to the southwest. After correlating tops in the abandoned No. 1 Bush and the Waples-Platter well, it is seen that a northeast dip exists between the dry hole and the Waples-Platter well.

South Basin

Completion of a ¼-mile spread to production and a ½-mile outpost location were reported for the increasingly active Foster pool in Ector County. Stanolind Oil & Gas Co.'s No. 30-A E. F. Cowden, 660 ft. from the SE cor. Section 22, Block 43, T.&P. Survey. It flowed 617 bbl. of oil in 24 hours from the pay section logged from 4,014 to 4,170 ft. Seeking to push production in the area ½ mile west, the same company staked No. 34-A Cowden, 660 ft. from the north line and 1,980 ft. from the east line of Section 22, Block 43, T.&P. Survey. The location is about ¾ mile northwest of the new completion.

The prospective deep-pay producer in the north end of the North Cowden pool of Ector County was still in the testing stage as the week closed. It is Stanolind Oil & Gas Co.'s No. 1-A Blakeney, NE SW Section 28, and about 3 miles south and slightly east of the Gulf Oil Corp.'s No. 1 Holt, discovery deep pay producer. The well was last reported swabbing through tubing set on bottom at 5,160 ft. No gages have been reported but commercial production is believed possible from the deep section logged from 5,120-40 ft.

In the Permian-lime producing Tubbs area of western Crane County, where Gulf Oil Corp. is completing No. 11 Waddell, a 2½-mile north extension for the field, the same company has staked location for No. 12 Waddell, C SE¼ Section 30, Block 26-B, P.S.L. Survey 1½ miles northeast of the pool proper and east of the indicated extension well.

Reeves County

Failure for the closely watched wildcat in southeastern Reeves County was seen when Forest Development Corp.'s No. 1 E. Scott, Section 286, Block 13, H.&G.N. Survey, which found 20 ft. of salt water with only a scum of oil in the deep Delaware sand, was abandoned after drilling to 5,336 ft. The test was plugged back last week to test a show from 4,950 to 4,980 ft. This also failed and the company was preparing to abandon.

Scurry County

The rapidly expanding Sharon pool in Scurry County had two wells in the completion stage as the week closed. D.&R. Oil Co.'s No. 2 McClure, north offset to the operator's No. 1 McClure, is being tested from the pay section logged from 2,230 to 2,480 ft. Robinson Oil Corp.'s No. 1 Woodward, which is a west offset to Wheeler's No. 1 Sims, was swabbing and flowing by heads from the lime pay logged from 2,240 to 2,450 ft. There are four locations staked and 13 completed wells in the field.

WEST CENTRAL TEXAS

FORT WORTH, Tex., Oct. 9.—General field development and widespread wildcat campaigns throughout the whole of West Central Texas show a considerable decline over the past 2 weeks. The area in no way shows serious indications of losing its rank as the most active wildcat district in the state, but several of the pools which have been reporting the majority of the completions and drilling wells over weekly periods are practically drilled up and, also the district's Palo Pinto-lime wildcat program has suffered several setbacks during the past 2 or 3 weeks. Greatest possibility for renewed activity is seen in operators' opinions that the new basal Strawn-oil-pool discovery in Nolan County will provide a new field of activity.

The largest one factor in decreased drilling is the Griffin pool of Jones County. Discovered less than a year ago, the field is nearly drilled up and offers a small source of activity hereafter. Another field approaching the defined stage is the Ivy pool of northwestern Shackelford County. With production limited by dry holes on all except the extreme northwest corner. Few completions and little activity are expected during the coming months. Latest completion in the Ivy pool and a slight northwest extension to the area is Owens-Snebold Oil Corp.'s No. 6 J. S. McKeever. It found production from 3,150 to 3,156 ft. and after taking several short gages during the week, was shut down for the Railroad Commission's gage. Operators began moving the rig southeast to drill No. 7 McKeever. Farthest northwest producer in the field is the Honea-West well on the Martin tract which found production from the lime at 3,189-93 ft. This well is several locations from production, however, operators express the opinion that development will continue as during the past; that is, extension wells will be drilled one at a time.

A new Palo Pinto-lime wildcat in the Shinery area of Jones County was staked by Owens-Snebold Oil Corp. and S. B. Roberts Co. It is No. 1 G. I. Jeffery, NW cor. SE¼ NE¼ Section 7, Block 15, T.&P. Survey, southeast of Anson. It is 1 mile west of the discovery well in the Sandy Ridge pool.

Considerable interest is being shown the first commercial oil well in Nolan County, Green & Owens and Metcalf & Hallinan's No. 1 Tipton, which opened a new pool, reported last week. Operators are scheduled to drill the test in early this week from saturated Strawn sand found at 5,135-38 ft. It has been heading oil intermittently since the zone was tapped more than a week ago. Location is 3 miles southwest of Trent, 7 miles southwest of the 13-year-old Noodle Creek field in southwestern Jones County, and in the center of a 5,400-acre block in Section 43, Block 19, T.&P. Survey. When the horizon was first tapped several flows furnished basis for estimates of an initial of nearly 500 bbl. daily. About 900 ft. of open 6-in. hole is above the saturated horizon, the 8-in. casing having been cemented at about 4,200 ft. several months ago.

The Marble Falls-lime play in eastern Young and western Jack counties received added interest when Taubert & McKee topped, reportedly high, the Caddo lime at 4,215 ft. in their No. 1 Shanafelt, west outpost to the Nelson Oil Syndicate's No. 1 Birdwell which opened a new pool in the extreme west edge of Jack County several weeks ago. The Taubert & McKee well, just over the line in Young County, is drilling ahead below 4,235 ft. after topping the Caddo lime at 4,215 ft. Danciger Oil & Refining Co. is deepening No. 2 A. Bailey, 2,500 ft. south of the Nelson discovery well, to the new horizon. The area is surrounded by shallow production from various levels, but the field is considered important in that deep Marble Falls lime is the producing horizon for the area.

Hopes for Ordovician production in West Central Texas were centered in Taylor County where a new deep wildcat has been staked by A. S. Everest and Marvin Bourn. It is No. 1 R. M. Beasley estate, NW¼ Section 37, Block 19, T.&P. Survey on a block of 4,000 acres. Contract depth is 5,500 ft. and the nearest Ordovician contracted test is Plymouth Oil Co.'s No. 1 McClure, in the northwestern part of Nolan County which adjoins Taylor County on the west.

WEST CENTRAL TEXAS COMPLETIONS

(September 17 to 23)

Brown County

Norman and others' No. 2 Rice, dry and abandoned at total depth of 987 ft.

Callahan County

Dobbs Oil Corp.'s No. 2 Finley, dry and abandoned at total depth 2,104 ft. Johnson's No. 6 Harris, dry and abandoned at total depth 442 ft. W. J. Murray's No. 3 Joe Evans, 1,734-57 ft., 81 bbl.

Coleman County

Cooper's No. 1 McCord, 3,975-77½ ft., 30 bbl. States Oil Corp.'s No. 4 Stockard, 3,585-3,629 ft., 118 bbl.

Comanche County

Cawley's No. 2 Anderson, 601-06 ft., 3 bbl.

Eastland County

Forbes' No. 1 Daniels, dry and abandoned at total depth of 480 ft.

Jones County

Consolidated Oil Corp.'s No. 1-A Cox-Hamilton, 3,261-75 ft., 2,220 bbl. Danciger Oil & Refining Co.'s No. 6 Guitar, 2,151-54 ft., 172 bbl. (old well drilled deeper). Danciger Oil & Refining Co.'s No. 9 Guitar, 2,143-46 ft., 204 bbl. B. Fields' No. 2 Barnard, 3,230-60 ft., 4,825 bbl. Gwynn & Overby's No. 2 Adams, 1,905-13 ft., 150 bbl. Iron Mountain Oil and Humble Oil & Refining Co.'s No. 2 Cockrell, dry and abandoned at total depth of 3,333 ft. Martin & Sons' No. 1 Davis, 1,713-16 ft., 35 bbl. W. H. Peckham's No. 6 Brock, 1,895-1,915 ft., 304 bbl. Radford Grocery Co.'s No. 1 fee, 3,261-71 ft., 504 bbl. Roberts and Cosden Oil & Refining Co.'s No. 8 Grayson, 3,150-

(Continued on Page 97)

North Louisiana, Arkansas

By GEORGE WEBER

Mississippi Promises to Be Busy Area If Tests Succeed

SHREVEPORT, La., Oct. 9.—Attention this week is increasingly directed to Mississippi, where exploratory operations and development of the state's first oil field indicate that the long-awaited boom may now be beginning. Drilling activity in the Tinsley field of Yazoo County is expected to show some increase this week when the two outpost tests of Union Producing Co. reach critical depth. In addition to the interest in and around Yazoo County, the first well to be drilled in the Northwest Alabama basin is rigging up in Itawamba County, and leasing has accelerated in that play. Throughout the northern section of the state, and extending to Alabama, activity is on the upgrade, and judging from the influx of seismograph and soil-analysis crews, geologists and land men, Mississippi seems to be entering a busy period.

The tri-state area, including North Louisiana, Arkansas and East Texas saw few developments of importance in the past week, as field drilling continued quiet, and wildcat operations disclosed no outstanding developments. In North Louisiana, four sections shared in interest. The deep outpost, Union Producing Co.'s No. 1-A Tensas, drilling on the north flank of the Monroe gas field in Morehouse Parish showed disappointing results from a test of the Smackover lime. The company released the following tops: Glen Rose, 2,165 ft.; Travis Peak, 3,084 ft.; Cotton Valley, 4,422 ft.; Smackover lime, 7,228 ft. On the drill-stem test last week at 7,262-76 ft., 320 ft. of mud and 1,279 ft. of salt water were recovered in 21 minutes in the Smackover lime. The test is drilling ahead below 7,321 ft.

Cotton Valley Test

Another deep test in the Cotton Valley field gave information on the horizons below the Bodcaw sand of the Lower Marine last week. Hunt Oil Co.'s No. 1 Glass, on the southeast edge of the field, topped Davis sand at 8,850 ft. and the G sand at 8,951 ft. The latter sand was found tight and shaly. This well has oil in both the D and Bodcaw sands farther up in the Lower Marine.

Sabine Wildcat

Oklahoma Texas Trust's No. 3 Frost Lumber Industries, NE cor. NE SW Section 22-9-13, southeast of Converse, blew out while drilling at 3,046 ft. The well was reported blowing at intervals and operators plan to acidize after shutting it in. Previously 250,000 cu. ft. of gas and about 5 bbl. of oil were recovered on a test at 3,031 ft., and a small show of oil was reported at 2,029 ft.

Shreveport Field

Activity is resuming in the Shreveport field, Caddo Parish, with the staking of three new locations. This field has been without any drilling activity for several weeks. South of the city of Shreveport, near the Broadmoor wildcat, drilled several months ago by F. W. Martin, David Crawford and others' No. 1 Lloyd is being rigged up on a 2,450-acre block. This wildcat will attract considerable attention in Shreveport.

Rodessa Outpost

South of the Cass County, Texas, section of the Rodessa field, near the Marion County, Texas, line, G. Scott Hammond's No. 1 Price, in the Charles Ames Survey, at the week end was setting casing to test two showings of gas and distillate in the Hill sand and some porosity and saturation in the Gloyd section.

ARKANSAS

Standard Oil Co. of Louisiana is beginning a wildcat in the vicinity of Magnolia, in Columbia County, Arkansas. It is No. 1 Petty Stave, C SE SE Section 4-17-21, 1 mile southeast of Phillips Petroleum Co.'s No. 1 Askew Unit, which found dense lime at 8,490-93 ft. last May.

Activity in the Dorcheat field of southwestern Columbia County is lagging. Atlantic Refining Co.'s No. 1 Pine Wood Lumber Co., discovery well of the field, is making about 5 per cent salt water but it is believed to be due to a poor cement job. Lion Oil Refining Co.'s No. 1 Warnock estate, an east offset to the discovery well, is rigged up but shut down.

EAST TEXAS BORDER COMPLETIONS

Rodessa—Marion County

Gulf Oil Corp.'s No. 2 C. W. Ray, 2,825 ft. from south line, 519 ft. from west line of John Hanks Survey, 236 bbl., ¾-in. choke, tubing pressure 175 lb., casing pressure 600 lb., total depth 6,008 ft.

NORTH LOUISIANA COMPLETIONS

Caddo—Caddo Parish

Burton & Harlan's No. 1 Huckaby, NE cor. NW SE Section 1-20-16, 50 bbl., pumping, total depth 1,560 ft. Paul Cooper's No. 7 Stiles, Section 33-21-16, old well worked over, old total depth 1,850 ft., pumping 10 bbl. at total depth of 1,870 ft. Hamilton & Stone's No. 1 Atlanta, NE cor. NW Section 2-20-16, pumping 5 bbl. oil and 50 bbl. of salt water, total depth 2,301 ft. Shidmore-O'Mara, Inc.'s No. 1 Muslow, SE cor. SW Section 31-31-15, old well worked over, dry and abandoned at 2,248 ft.

Rodessa—Caddo Parish

East Texas Refining Co.'s No. 1 Ewing Atkins, C NW NE Section 8-23-15, 276 bbl. through open tubing, casing pressure 400 lb., total depth 6,140 ft.

Wildcat—Caddo Parish

Prairie River Syndicate's No. 2-B Hutchison, SW cor. Section 3-15-12, dry and abandoned at 6,010 ft.

Wildcat—Caldwell Parish

Arkansas Fuel Oil Co.'s No. 1 Louisiana Central Lumber Co., Section 31-12-3e, dry and abandoned at 7,528 ft.

Urania—La Salle Parish

Snow Black Oil Co.'s No. 1 Pendarvis, NE cor. SW SE Section 21-10-1e, dry and abandoned 1,350 ft.

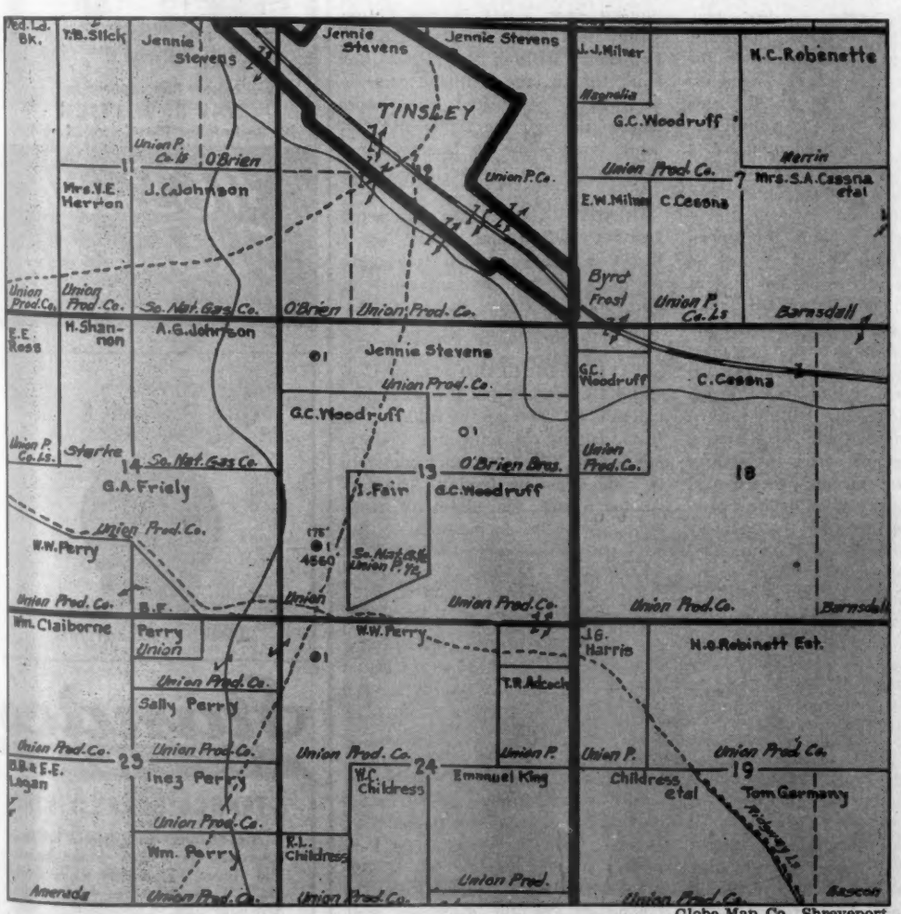
Zwolle—Sabine Parish

Hunter Co.'s No. 1-B Sabine, NE cor. NW NW Section 17-7-13, pumping 30 bbl. of oil and some salt water at total depth of 2,575 ft.

Monroe—Union Parish

W. E. Hope Gas & Oil Co.'s No. 4 Frost Lumber In-

(Continued on Page 98)



Globe Map Co., Shreveport

The Tinsley field of Yazoo County, Mississippi, is a center of interest, with two Union Producing Co. wells nearing pay, and one east outpost test drilling. Several locations are awaiting the outcome of the Union wells

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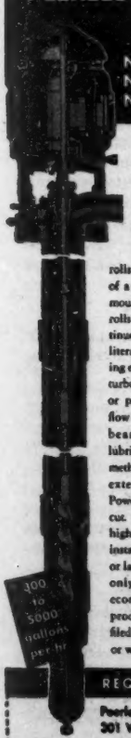

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Among the Drilling

PETROLEUM DRILLING CO. and Baffins Bay Oil Co. have moved to Fort Worth, Tex., from San Antonio, Tex., and have opened joint offices for both concerns in the Fort Worth National Bank Building. E. McAdams is president of both companies, while M. Unger is secretary-treasurer. E. L. Malsbary, Jr., is vice president of the drilling company and Franklin E. Bernson is vice president of the Baffins Bay Oil Co. The drilling company was active in McMullen County in South Texas, but wishing to expand their activities to include West Texas, North Texas and Louisiana, the central office was moved to Fort Worth. E. McAdams was a prominent drilling contractor in the Kettleman Hills district of California several years ago.

TAUBERT & McKEE DRILLING Co., Fort Worth, Tex., is one of the most active contractors in the deep lime area of Jack and Young counties in West Central Texas. The firm recently completed a new pool opener for the Nelson Oil Syndicate in Jack County, and almost on the Young County line, it is drilling below 4,300 ft. at its No. 1 Shanafelt which is a west outpost to the Nelson discovery well. It is deepening No. 2 A. Bailey for Danciger Oil & Refining Co., which is a 2,500-ft. south offset to the Nelson discovery well, and it is drilling below 2,700 ft. for Rowan & Nichols at their No. 2 J. Matlock on the east side of the Bryson pool of Jack County. The Nelson Oil Syndicate's No. 1 Birdwell was completed several weeks ago to open a new deep Marble Falls-lime pool for the extreme western edge of Jack County. Taubert & McKee are drilling toward the deep zone in their No. 1 Shanafelt, which is just across the county line and in the extreme western edge of Young County. The drilling company is below 4,100 ft. in the Danciger Oil & Refining Co.'s No. 2 Bailey, south of the discovery well and in the southwest corner of the north 77½ acres of the A. M. Bailey Survey, Abstract 1,597. For Rowan & Nichols the drilling company is below 2,700 ft. at No. 3 Matlock, the first test in several weeks for the east side of the 3,200-ft. Bryson pool of Jack County.

MID-UNION DRILLING CO., North Texas contractors and producers, is drilling below 4,994 ft. for Shell Oil Co., Inc., at its No. 1 Scaling, wildcat test in the southwestern part of Clay County, North Texas. The test is on the south end of the recent trend established by the Burns and the Halsell pools. On a block of acreage which was completely shot with seismograph by Shell, the test is located in Block 87, J. H. Belcher Survey, 5 miles south of the Burns pool, which is a 4,400-ft. Strawn-sand producing field. It is not known whether the company intends drilling deeper or abandoning when its contract depth of 5,000 ft. is reached.

RED IRON DRILLING CO. is setting casing on a Cass County, Texas, outpost to Rodessa, G. Scott Hammond's No. 1 Price, which shows gas-distillate in the Hill sand, and some porosity and saturation in the Gloyd section. The same contractors are beginning an important wildcat in Itawamba County, Mississippi, for G. C. Grasty and others. This test, No. 1 Kentucky Lumber Co., is the first to begin in the Northwest Alabama basin, which has seen considerable leasing play in the past several months.

PENROD DRILLING CO. is exploring deep sands in the Cotton Valley field of Webster Parish, North Louisiana. Drilling No. 1 Glass, for Hunt Oil Co., the affiliated contractors have penetrated the lower Marine through the Davis and "G" sands lying below the Bodcaw sand, main production horizon in the field.

GRADY VAUGHN has contracted David Crawford and others' No. 1 Lloyd, a wildcat which is rigging up on a wildcat location south of Shreveport in Caddo Parish, Louisiana.

TAYLOR DRILLING CO., of Centralia, Ill., reports that it has reached a depth of 3,723 ft. on the wildcat well it is drilling in Lafayette County, Mississippi. This test is approximately 90 miles from production. The contractor reports that slight oil showings have been encountered in the well which it expects to drill to at least 4,000 ft.

FARRIS & GOLDING DRILLING Co. has derrick up for a wildcat east of the University field in East Baton Rouge field, coastal Louisiana. The well is located on the McEnnis lease in Section 58-7s-1e.

GLENN H. McCARTHY staked location for another deep test in the newly opened Chocolate Bayou field, Brazoria County, Texas. The location is approximately 9,800 ft. due north of his No. 1 Houston Farm Development Co., the discovery well. Drilling was started on No. 2 Houston Farm Development Co., while in

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the Anchor field No. 1 Salmon and Momma has been spudded.

N. W. HUNTER is drilling a southwest outpost at the Hastings field, Brazoria County, Texas, and is preparing to spud his No. 1 Mantor, a wildcat, 6 miles northeast of Agua Dulce in Nueces County.

ROWAN & HOPE are rigging up at the Samfordyce field, Hidalgo County, Texas, for No. 1 V. G. Chapa. The well is being drilled jointly with Earl Baldridge.

FALCON-SEABOARD DRILLING Co. has cemented a string of 9⅝-in. casing in Gulf Oil Corp.'s No. 2 Grandison, a projected 12,000-ft. test located in La Fourche Parish, coastal Louisiana.

O. W. DYER has cemented casing preparatory to testing his No. 1 R. W. Humphrey, an outpost well located in the Hardin field, Liberty County, Texas. The hole is bottomed at 7,586 ft., with oil sand logged at 7,532-53 ft.

H & H DRILLING CO. was drilling below surface pipe on the Sun Oil Co.'s No. 2 Trigg in the Corydon pool in Henderson County, Kentucky. The test is located 60 ft. northwest of the No. 1 well.

KIRK-GREEN-WAY, Inc., Tulsa, at No. 1 Doran, in NW cor. SW¼ Section 32-19-2e, north of the Ramsey pool, in Payne County, Oklahoma, was drilling at 450 ft. after setting 200 ft. of surface casing.

JOHN WATKINS is about 1,000 ft. deep on the W. S. Tatum's No. 1 M. D. Aud, NE SW SW Section 23-6s-9e, south of the town of Carmi, Ill. The test is located on the south bank of the Little Wabash River and is one-half of a mile south of Angle & Eason's No. 1 Storms heirs, a recent gas discovery in the area.

MURRAY & GRIFFEY Drilling Co., Tulsa, and R. L. Kemp, Cushing, Okla., have been drilling No. 1-A Burke, in NE SW NE Section 20-17-6e, southwest of Cushing in Lincoln County, Oklahoma. Operators have been running tubing preparatory to testing. The hole was bottomed at 2,910 ft. in the Prue. Murray & Griffey have been drilling No. 1 Harjo, in NE SW NW Section 34-8n-7e, in the East Little River area, in Seminole County, Oklahoma, below 1,400 ft.

NELSON DRILLING CO., Hutchinson, Kans., and others' No. 1 John Malm, in the NW¼ Section 25-20-6w, in the Rice County sector of the Bornholdt pool, Kansas, topped the chat at 3,280 ft. and drilled to 3,283 ft. for a stain of oil in the cuttings. The test offsets the same interests, No. 1 Hodge, a 442-bbl. chat producer.

HERNDON DRILLING CO., Tulsa, apparently had defined the Geneseo pool, Kansas, on the north at its No. 1 Durr, in SW cor. Section 18-18-7w, ¼ mile north of nearest production. Field reports said the Durr was abandoned after encountering water with oil in Arbuckle dolomite penetrated to 3,241 ft.

BATES & LICHLYTER was coring the Cypress sand on the Robert Brothers' No. 1 Keck, NW NE NW Section 34-3s-14w, Posey County, Indiana. The test was running about level with field producers on top of the Glen Dean lime.

Helmerich & Payne, Inc., Tulsa, crew on a diesel-powered rotary drilling in the Vacuum field of Lea County, New Mexico: J. T. (Brownie) Hurt, driller; Bob Heriacher, tool pusher; Myrel Edison, helper; and "Heavy" Huddleston, helper

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THE OIL AND GAS JOURNAL

Tulsa, Okla.

North and East Texas

By
D. H. STORMONT

Outposts to New Pools Start Despite Cuts in Allowables

WICHITA FALLS, Tex., Oct. 9.—Despite the Texas Railroad Commission's deep cuts in allowable production of wells in new North Texas pools, outpost locations in the Caddo-lime area of northwestern Archer County and the Canyon-lime pool of Baylor County, were made in the past week. Archer County's extremely active Hull-Silk area was given one of its most important tests in the staking of No. 1 O. T. Anderson by the Cato Oil Co. The location falls midway between the limits of the Hull-Silk pool proper and the Sikes pool.

The Railroad Commission has set October 13 as the date for the hearing of requests for increased allowables for the Voth pool of Cooke County and the Bowers pool of Montague County, both hard hit by the discovery-well cutback order. The Mankins deep pool of northwestern Archer County, Caddo-lime producing area at 4,700 ft., was given a new location in spite of the fact that the two wells in the pool suffered a cut of from 100 bbl. per well daily to 44 bbl. per well daily. British American Oil Producing Co., which has a well each on the Wilson and the Parker lands, staked No. 1-B Tom F. Hunter and Eddleman, a west offset to the discovery well and in the northwest corner of the McKinney & Williams Survey, Abstract 310.

One of the most important locations announced since the extension activity began in the Hull-Silk area was made when Cato Oil Co. staked its No. 1 O. T. Anderson, 330 ft. from the south and west lines of a 100-acre tract in the J. H. Brook Survey, Abstract 17, midway between the Hull-Silk pool northeastern extension area and the west edge of the Sikes pool. It is about ½ mile from the extremities of each field and is expected to, if completed for commercial production, definitely establish the two areas as being on a common structure.

A sale of producing properties was reported in the Hull-Silk area, the deal consisting of two leases totaling 90 acres with a deep producing well on each. Southern Exploration Co., Sistersville, W. Va., paid $180,000 cash and $40,000 in oil for the properties, which also include five wells producing from the 1,200-ft. sand. Purchase was made from Bert Ligon, Wichita Falls, one of the main operators in the Hull-Silk field, and one of the leaders in the northeast extension activity of the past few months. One of the tracts was the 40-acre Ray Carson lease and the other a 50-acre tract in the Moss farm, both being in Section 1, H.T.&B. Survey.

Baylor County's Seymore pool, opened early in the year by British American Oil Producing Co., received a new location, a south offset to the second producer in the field which extended the area ½ mile east of the discovery well. This field was cut in allowable production from 100 bbl. per well to 44 and 27 bbl., respectively, for the two wells. The new location is British American's No. 2-C F. C. Green, 660 ft. from the south and west lines of NE SW Section 216, T.&N.O. Survey. It is contracted to 2,600 ft.

Clay County's active wildcat campaign of the past few months received a setback and also a slight stimulus when a dry hole at a contract depth of 5,000 ft. was reported and a new 5,000-ft. wildcat was located. The location is Consolidated Oil Co., Superior Oil Co., and A. R. Dillard's No. 1 Ross Brothers, 1,650 ft. from the north and 330 ft. from the west lines of the W. Walker Survey, Abstract 703, on a unitized block 5 miles south of Jolly, and approximately 6 miles north and a little west of the 4,700-ft. Halsell pool. Indicating another failure in the wildcat program of the southwest quarter of the county, Shell Oil Co., Inc., is below the contract depth of 5,000 ft. in No. 1 L. C. Scaling, in the C of Block 87, J. Belcher subdivision, about 4 miles directly south of the two-well Burns pool. The hole will be carried to 5,200 ft. in search of Caddo-lime production found in the Frabor-Hodges and Mid-Union Drilling Co.'s Kinder, in the extreme southwestern part of the county.

In the Wilbarger County extension area of the K.M.A. pool, Consolidated Oil Co. has made a location for No. 2 C. Ancell, 1,374 ft. from north and 330 ft. from the east lines of the lease and west of No. 1-N Ancell, in the NE cor. Section 35, Block 6, H.&T.C. Survey. Operator has plugged and abandoned No. 1-DD Waggoner, Section 1, Block 5, H.&T.C. Survey, 1¼ miles northwest of the first extension well. The test was dry in the regular Strawn pay and also in the shallow 1,800-ft. section to which it was plugged back for possible production.

Interest was shown in a Hardeman County wildcat during the week when Amerada Petroleum Corp.'s No. 1 Rice estate, Section 81, Block H, W.&N.W. Survey, 10 miles southeast of Quanah, drilled slight showings of gas from 7,830 to 7,835 ft. and from 7,845 to 7,850 ft. It was last reported drilling ahead below 7,980 ft.

A new wildcat operation was reported in Denton County when "Boots" Lewis located No. 1 J. P. Knox estate in the R. Howard Survey, ¼ mile northwest of a gas well completed last year by the Bolivar Drilling Co. The area also includes an oil well making about 10 bbl. daily. The location is about a mile west of Bolivar, in the northwest part of the county.

NORTH TEXAS COMPLETIONS

Archer County

Barnes & Traugh's No. 1 Ray Carson, 4,299-4,312 ft., 1,200 bbl. Bridwell Oil Co.'s No. 1 Fred Thom, 3,773-3,864 ft., 135 bbl. L. T. Burns' No. 4 K. Ahrens, 4,254-4,325 ft., 750 bbl. C. B. Christie and others' No. 1 Dr. J. A. Little B, 4,321-45 ft., 775 bbl. H. H. Fraser's No. 1 W. M. Coleman, 1,704 ft., dry. Bert L. Ligon and others' No. 8 Moss B, 1,287-89 ft., 75 bbl.

Clay County

E. N. Costley and others' No. 1 W. A. Henderson, 1,403 ft., dry. W. H. Gant's No. 1 E. Spring, 3,990 ft., dry. Nixon Brothers & Dutton's No. 1 Mrs. W. M. Tammen, 1,506 ft., dry.

Cooke County

Big Indian Oil & Development Co.'s No. 3 George Gehrig, 1,919 ft., dry. Cox & Hammon's No. 1 K. Neu A, 4,945-89 ft., 920 bbl. W. O. Russell and others' No. 1 TCU, 1,120-29 ft., 72 bbl., in 10 hours. Trumter Oil Co.'s No. 19 G. T. Andress and others, 761-85 ft., 28 bbl. Whitfield, Pearson & Grimes' No. 3-B Voth B, 1,748-52 ft., 212 bbl.

Wichita County

E-C Oil Co.'s No. 1 Anna Mangold A, 3,750-3,826 ft., 498 bbl. W. B. Hamilton's No. 6 N. H. Martin A, 3,744-3,892 ft., 728 bbl. Hanlon-Buchanan, Inc.'s No. 1 Fassett & Tuttle F, 4,145 ft., dry. Perkins & Cullum's No. 23 S. B. Burnett and others A, 665-73 ft., 15 bbl. Royal Petroleum Corp.'s No. 2 R. B. James and others, 3,950-4,001 ft., 1,280 bbl.

Wilbarger County

Consolidated Oil Co.'s No. 1 W. T. Waggoner DD, 4,248 ft., dry.

Young County

K. R. March's No. 2 Hunt & McClatchey, 1,163 ft., dry.

EASTERN TEXAS

DALLAS, Tex., Oct. 9.—The widespread increase in wildcat and exploration activity continued for another week in the eastern Texas district. Two wildcat locations were staked and an 18,000-acre block was assembled in the East Texas basin area. General field activity showed a slight drop during the week, but the increased number of new locations indicate more drilling in the coming weeks. Only three completions were reported in the East Texas field, while a completion in the Navarro Crossing field in Houston County, and the abandonment of a shallow wildcat in Grayson County totaled the East Central completions. Twelve new locations were announced for the East Texas field.

The Flag Lake field, recently extended across the Navarro River and into Navarro County, continues its activity as a new completion entered the final stages. The well is Topaz Oil Co.'s No. 3 Trammel, second producer for the Navarro County portion of the field. The well made a 24-hour gage of 352 bbl., flowing through ¾-in. choke on tubing. Pay section was logged from 3,000 to 3,004 ft. No water was reported and the flow was under pressure of approximately 400 lb. on the tubing. It is 660 ft. south of No. 2 Trammel, first producer in the area, completed for 602 bbl. daily from 13 ft. of sand drilled to a total depth of 3,008 ft. Both wells are on a Humble farmout in the A. C. Keyser Survey. Rig is being moved 660 ft. farther south for the No. 4 Trammel. The No. 1 Trammel was a failure.

Shell's Big Block

Shell Oil Co., Inc., which has been expanding its activities in the eastern Texas area during the past few months, has staked a block totaling 18,867 acres and lying in four counties. The acreage involves land owned or formerly owned by Texas Long Leaf Lumber Co., under which Thompson Brothers Mineral Co. possessed the mineral rights. The land included in the lease extends from the town of Trinity westward in Trinity County and Walker County to the Trinity River; north from Trinity in that county and also Walker and Houston counties to Weldon; and in the southwestern part of Houston County. Total acreage includes 3,743 acres in Houston County, 9,434 acres in Walker County, 2,280 acres in Trinity County and 3,401 acres along the Houston-Trinity county line.

Shell Oil Co., Inc., is also backing two deep 10,000-ft. tests in Houston County, one of which was spudded during the week. The starting deep test is the J. C. Wynne Drilling Co.'s No. 1 Shell-Dorsey estate, 2 miles south of Percilla and more than ½ mile south of the single producer in the Percilla area. Wynne Drilling Co. will carry it to the Woodbine for a test of that horizon. If the Woodbine fails Shell will continue the hole to the 10,000-ft. level. The other deep test in the county is J. C. Cook's No. 1 B. T. Masters, ½ mile north of the single oil producer in the Grapeland field. The well is on a lease formerly held by Shell and that company is reported prepared to carry the test to 10,000 ft. should the Woodbine sand fail to pay off. Several geophysical crews are, and have been for the past month, active in Houston County.

Two new wildcat tests were started in the area during the week, one each being in Angelina and Hunt counties. K. L. McHenry has located his No. 2 Russell estate in the A. Flores Survey, 4 miles north of Lufkin. It is in a 92-acre tract south of the northwest corner of the Russell tract and is drilling at 460 ft. In Hun County K. E. Jennings has reinstated No. 1 V. T. Banks, in the J. W. Haynes Survey, 5 miles northeast of Greenville, and intends to test showings. It was last reported plugged back to 2,114 ft. from an old total depth of 3,342 ft. to test a section below the Austin chalk.

In Smith County the Texas Co. is drilling below 6,600 ft. in its No. 1 Scritchfield, 2 miles northwest of Bullard and in the D. Page Survey. It will be carried to

(Continued on Page 99)

Kansas Developments

By DAL DALRYMPLE

Extend Trapp, North Canton, Wherry, Cunningham Limits

The Wherry pool in Rice County, Kansas, was extended ¾ mile northwestward at C. L. Carlock and others' No. 1 Renollet, SE SE NE Section 36-20-8w, a conglomerate producer estimated good for 1,800 bbl. of oil daily. Conglomerate was found at 3,317½ ft. and drilled to 3,323 ft. It flowed naturally after plug was drilled, but production test was delayed pending erection of tanks. The extensioner, located on subsurface geology by Delmer L. Powers of Wichita, brings Wherry production to within 6 miles southeast of the town of Lyons. The south offset tract is leased by Mr. Carlock; Shell Oil Co., Inc., has the east offset and Gulf Oil Corp. the southeast offset.

Extension of the North Canton pool in McPherson County ½ mile northward was indicated at Kuhn & Funk's No. 1 Wilson, SE SE NE Section 26-18-1w. It found chat at 2,825 ft., drilled to 3,851 ft. and had oil showing. The crew was drilling ahead.

Skelly Oil Co. extended the Cunningham field in Kingman County ½ mile southwestward at No. 1 Miller, CSL N½ NW Section 31-27-10w. It found Viola lime at 4,062-74 ft., total depth, and gaged 17,000,000 cu. ft. of gas in 24 hours naturally. After acidizing, production was increased to 40,000,000 cu. ft. daily.

Arbuckle-lime production in the North Fairfield pool, Russell County, was uncovered at Earl K. Wakefield's No. 1 Meharg, SE cor. Section 16-15-13w. Originally completed at 3,112 ft. in Lansing lime for 835 bbl. of oil daily, it was deepened to Arbuckle lime at 3,332-39 ft., and oil rose 1,600 ft. in the hole in 3 hours. Seven-inch casing was being cemented and standard tools rigged up for completion.

Total potential of Kansas oil wells attained a new peak in September, being increased to 4,541,908 bbl. daily, according to Corporation Commission records. This includes productive capacity of 4,498,655 bbl. for 5,366 prorated wells, and 43,253 bbl. daily for 14,055 nonprorated or minimum wells. The August report listed 19,323 wells with total potential of 4,368,422 bbl.

Ellis County

Lario Oil & Gas Co.'s No. 1 Cress, SW cor. Section 13-11-17w, Cress pool, Ellis County, was bottomed at 3,383 ft. in Arbuckle lime, acidized and completed for initial daily potential of 3,500 bbl. of oil.

Frank H. Hollow's No. 1 Cress, SW NW SW Section 13-11-17w, was completed for initial daily potential of 3,430 bbl. of oil in Arbuckle lime at 3,362 ft., total depth.

Russell County

Gulf Oil Corp.'s No. 1 Everett, C W½ SW NE Section 20-15-13w, Russell County, extended the Trapp pool ⅝ mile northward when completed the past week for 119 bbl. of oil daily from Arbuckle lime at 3,320 ft., total depth. Although it is only ⅝ mile south of Coralena-pool production and was generally considered the connecting link between the two pools, the Nomenclature Advisory Committee of the Kansas Geological Society added it to the Trapp field.

Shell Oil Co., Inc.'s No. 5-B Ehrlich, CNL N½ SW Section 1-16-14w, was acidized and made daily potential of 95 bbl. of oil from Arbuckle lime at 3,336 ft., total depth.

Alva Billings' No. 1 Holl, NE NE SE Section 21-14-14w, Gurney pool, drilled to 3,117 ft. in Lansing lime, was acidized and completed for initial potential of 1,919 bbl. of oil daily.

Sinclair Prairie Oil Co.'s No. 7 Rogg, CNL NW SE Section 29-14-13w, Hall pool, drilled to 2,924 ft. in Lansing lime, was acidized and made daily potential of 1,027 bbl. of oil.

Coralena Oil Co.'s No. 1 Sellens, CSL N½ NW Section 17-15-13w, Coralena pool, was completed for 1,460 bbl. of oil daily from Arbuckle lime at 3,180 ft., total depth.

Same company's No. 1 Trapp, SW SE NE Section 29-15-13w, Trapp pool, initialed 70 bbl. of oil daily from Arbuckle lime at 3,338 ft., total depth.

Shell Oil Co., Inc.'s No. 7 Dumler, NW SE SW Section 36-15-14w, was treated with acid and made 24-hour potential of 2,389 bbl. of oil from Arbuckle lime at 3,316 ft., total depth.

Stafford County

Stanolind Oil & Gas Co.'s No. 11 Hartnett, C N½ NE NW Section 13-24-11w, Zenith field, Stafford County, was bottomed at 3,774 ft. in Misener sand and on retest potential test by computation of bottom-hole pressure was rated at 1,102 bbl. of oil daily.

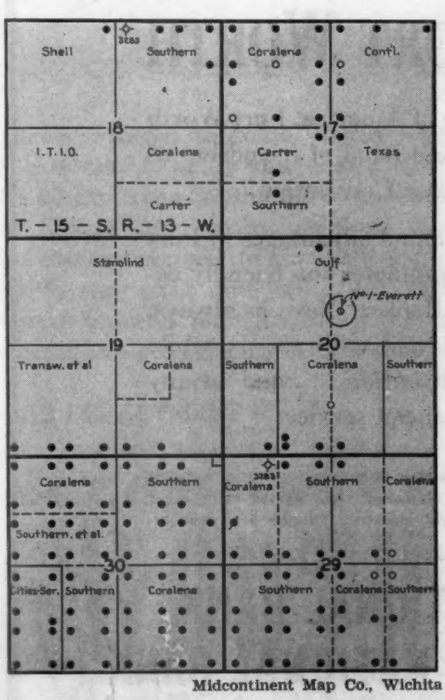
E. H. Moore, Inc.'s No. 4 Stewart, C S½ SW SE Section 12-24-11w, was bottomed at 3,753 ft., and made potential of 1,270 bbl. of oil from Misener sand.

Rice County

Skelly Oil Co.'s No. 1-E Bernstorf, C S½ NE SE Section 22-19-10w, Silica field, was completed at 3,287 ft., total depth, in Arbuckle lime for daily initial yield of 90 bbl. of oil.

Same company's No. 1-C Bernstorf, C S½ SE NE Section 27-19-10w, made initial potential of 71 bbl. of oil and was completed at total depth of 3,272 ft. in Arbuckle lime.

Shell Oil Co., Inc. and others' No. 2 Saint, SE SE SE Section 10-19-9w, northeast edge of the Cramm pool, found Arbuckle lime at 3,256 ft., total depth 3,262 ft., and swabbed 38 bbl. of oil in 8 hours. After acidizing, it swabbed 25 bbl. of oil and 108 bbl. of water in 4 hours and was completed.



Midcontinent Map Co., Wichita

Gulf Oil Corp.'s No. 1 Everett, C W½ SW NE Section 20-15-13w, between the Trapp and Coralena pools, Russell County, was completed for 119 bbl. of oil from Arbuckle lime

Barton County

Stanolind Oil & Gas Co.'s No. 12 Schartz, CNL N½ NW Section 2-20-11w, Silica field, Barton County, was completed for 189 bbl. of oil daily initially at total depth of 3,301 ft. in Arbuckle lime.

Ellsworth County

Mid-Continent Petroleum Corp.'s No. 1 Dougherty, SW SE NW Section 33-17-10w, Ellsworth County sector of the Stumps area, was bottomed at 3,280 ft. in Arbuckle lime and made 24-hour potential of 104 bbl. of oil.

Estimated Daily Production

Estimated daily production for Kansas for the week ending October 7, and for the preceding week was as follows:

	Barrels	
	Oct. 7	Sept. 30
Oxford City	775	825
Burrton	8,725	9,650
Ritz-Canton	4,325	4,675
Graber	2,100	2,025
Hollow-Nikkel	1,825	1,925
Lerado	1,175	775
Voshell	1,675	1,775
Wellington	1,950	2,000
Ellsworth County:		
Lorraine	2,000	1,950
Other pools	2,195	1,875
Rice-Barton counties:		
Bloomer	2,025	2,925
Chase	3,900	3,900
Geneseo	1,575	3,025
Raymond	475	600
Silica	8,675	10,050
South Silica	1,275	2,075
Keesling	775	925
Wherry	2,900	3,525
Miscellaneous Rice	5,675	4,440
Miscellaneous Barton	8,935	8,445
Russell County	17,500	24,850
Sedgwick County	2,525	3,400
Ellis County:		
Bemis	2,350	5,000
Miscellaneous	3,485	4,055
Kingman County	910	850
Stafford County	7,850	7,515
Greenwood County	8,900	8,900
El Dorado	7,675	7,625
Other fields	29,925	27,645
Total Kansas	144,075	157,225

McPherson County

Continental Oil Co.'s No. 9 Huxman, SW SW NW Section 29-21-1w, Graber pool, McPherson County, initialed 427 bbl. of oil daily and was completed at total depth of 3,280 ft. in Hunton lime.

H. C. Bennett's No. 1 Peterson, CNL SW NW Section 32-20-5w, Bornholdt pool, made 482 bbl. of oil daily on retest potential, producing from chat and bottomed at 3,375 ft.

Cowley County

W. M. McKnab and Tulsa Oil Corp.'s No. 2 Hittle, SW NW NE Section 21-31-4, Hittle pool, Cowley County, drilled to 3,384 ft., total depth, in Arbuckle lime, and made 24-hour potential of 3,319 bbl. of oil.

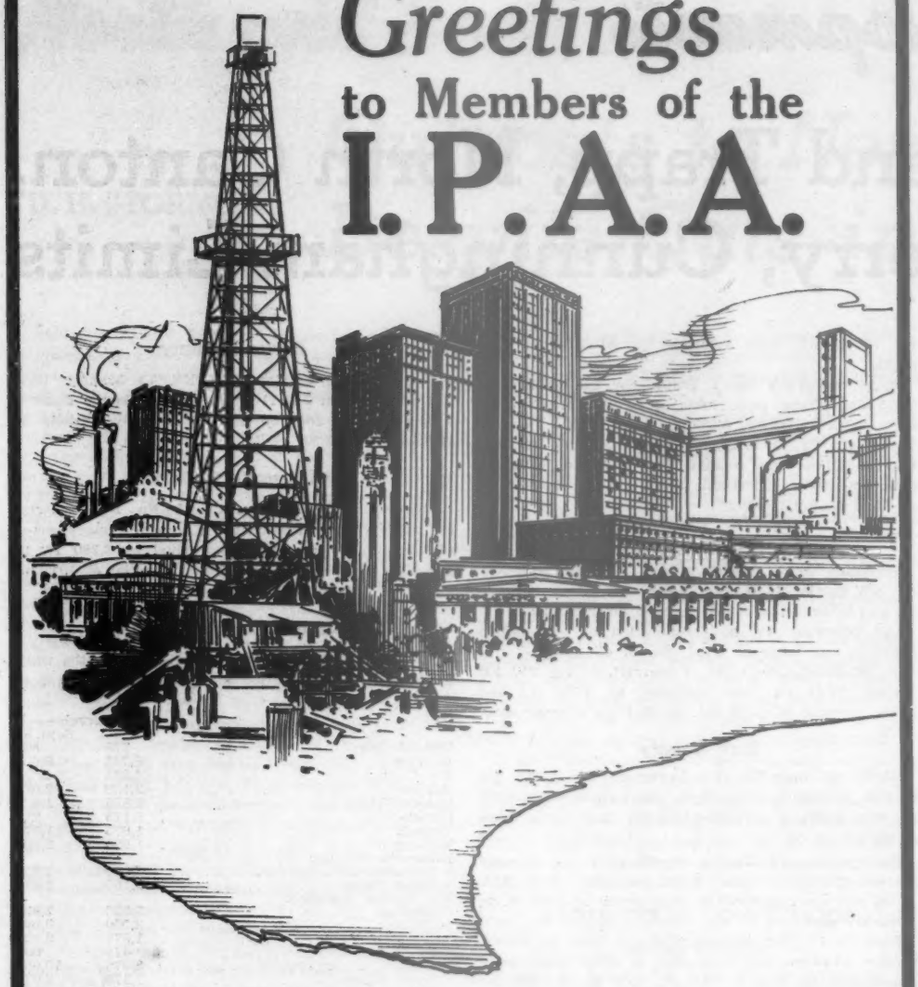
Sinclair Prairie Oil Co.'s No. 2 Gardner, SE NW SE Section 16-32-5, Frog Hollow area, made initial daily potential of 543 bbl. of oil. It was bottomed at 3,101 ft. in Bartlesville sand.

Kingman-Pratt Counties

Skelly Oil Co.'s No. 1 Miller, CSL N½ NW Section 37-27-10w, ½ mile southwest extensioner of the gas area in the Cunningham field, Kingman County, produced 17,000,000 cu. ft. of gas naturally, was acidized and completed for 40,000,000 cu. ft. daily. Viola lime was found at 4,062-74 ft.

Drillers Gas Co.'s No. 1 Gerber, C E½ E½ Section 35-27-11w, Pratt County sector of the Cunningham field, found Viola lime at 4,122-42 ft., total depth, and

Greetings to Members of the I.P.A.A.



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had initial daily yield of 28,000,000 cu. ft. of gas after acid treatment.

Reno County

Westgate-Greenland Oil Co.'s No. 2-B Hagerty, SE SE NW Section 36-22-5w, Buhler pool, Reno County, topped Arbuckle lime at 4,010 ft., was bottomed at 4,605 ft., and completed for salt-water disposal well.

Woodson County

McCormick and others' No. 1 Specht, NW cor. Section 34-25-14, Woodson County, was dry and abandoned at 1,460 ft., total depth.

In Johnson County B. F. Hammel's No. 2 Ballard, NW SE SE Section 4-12-24, was dry and abandoned at 560 ft., total depth.

Wildcat Completions

Broderick & Gordon's No. 1 Kowalsky, C E½ SE NE Section 30-20-11w, Barton County wildcat, topped Simpson zone at 3,360 ft., had nothing showing and was abandoned at 3,442 ft.

Simpson & Noble and others' No. 1 Marsh, NW NW SW Section 23-28-6, wildcat in Butler County, was dry and abandoned in Arbuckle lime at 3,231-52 ft., total depth.

H. B. Snyder and others' No. 1 Feeler, SW NW NW Section 27-15-20, wildcat in northern Franklin County, drilled Squirrel sand at 765-73 ft., and was estimated good for 150,000 cu. ft. of gas, but was dry and abandoned at 830 ft., total depth.

Haworth and others' No. 1 Mosbacker, SE SE NW Section 4-10-20, Jefferson County location, was reported abandoned. Forest Kelley's No. 1 Ryan, NE NE SW Section 24-16-22w, Ness County wildcat, was an abandoned rig.

New Field Tests

First reports of new operations included:

Barton County — Stanolind Oil & Gas Co.'s No. 2 Eberhart, C N½ NE SW Section 13-19-11w, location; Claud Drilling Co.'s No. 1 Petz, C W½ SW SW Section 14-19-11w, building rig; Stanolind Oil & Gas Co.'s No. 17 Panning, SW SE SE Section 10-20-11w, and same company's No. 18 Panning, SW SW SE Section 10-20-11w, locations.

Butler County—Rex & Morris and others' No. 3 Johnson, NE SE SE Section 20-26-7, moving in material; same operators' No. 4 Hutton, SE SW SW Section 14-28-7, moving in material; Allison & Talbott's No. 1 Zink, SE SE NE Section 32-29-5, wildcat, rigging up machine.

Ellis County—Frank Hollow's No. 2 Cress, SE NW SW Section 13-11-17w, moving in material; York State Oil Co.'s No. 1 Bemis, C S½ NE NW Section 33-11-17w, building rotary rig; Phillips Petroleum Co.'s No. 5 Hendrick, C S½ SE NE Section 13-11-18w, location; Marion Oil Co.'s No. 1 Byers, C E½ SW SE Section 15-12-18w, cellar.

Greenwood County—Shull Drilling Co. and others' No. 2 Long, NE SW NE Section 17-23-13, cable rig.

Harvey County — Aylward Production Co.'s No. 2 Wiley, SE SE NE Section 18-23-3w, building rig.

Kingman County—Skelly Oil Co.'s No. 3 Conley, C S½ N½ SW Section 20-27-10w, building rotary rig.

McPherson County—H. C. Bennett's No. 1 Petz, C W½ W½ NW Section 8-21-5w, wildcat, cellar; Continental Oil Co.'s No. 1 Peterson, C N½ SW NW Section 32-20-5w, building rotary rig.

Reno County—Dutton and others' No. 1 Greene, SE cor. Section 8-23-4w, wildcat, rigging up rotary.

Rice County — Schneider, Pulse and others' No. 2 Partington, NW SE SW Section 22-21-9w, rigging up rotary; Finston and others' No. 2 Hathaway, C S½ NW SW Section 27-19-10w, building rig; J. H. Tatlock's No. 1 Proffitt, NW NE NW Section 13-20-10w, drilling below 982 ft.

Rooks County—Iowa-Kansas Oil Co.'s No. 1 Beardmore, C E½ SE NE Section 10-9-16w, location; Plainstock Oil Co.'s No. 2 Westhusin, C W½ SE SE Section 11-9-17w, shut down at 2,463 ft.

Russell County—Stanolind Oil & Gas Co.'s No. 5 Resner, C N½ SE SW Section 9-15-13w, location.

Stafford County—Stanolind Oil & Gas Co.'s No. 7 Fuller, C E½ SW SW Section 11-24-11w, location.

Woodson County—Henderson & Keene's No. 2 Piper, NW NW SE Section 19-23-15, spudded 60 ft.

Forest City Basin Activity

ST. JOSEPH, Mo., Oct. 9.—E. F. Neely of Shreveport, La., new operator in the Forest City basin, announced location for his first Missouri test at No. 1

Welcome I·P·A·A

To FORT WORTH

Amusement Center of the Southwest

TO THE MEMBERS AND FRIENDS OF INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA:

Fort Worth extends to you a hearty western welcome. Come to your convention (October 18, 19, 20) prepared to enjoy yourselves. Large, cool assembly rooms in as fine hotels as the South affords—beautiful theaters, glittering night clubs, fishing and boating on three of the South's finest lakes, golf (there are ten courses to choose from) and many other attractions. Plan to stay over until the 21st and see Texas Christian University's great football team in action against Texas A. & M. For further information concerning Fort Worth and the convention address

OIL AND GAS DEPARTMENT

CHAMBER of COMMERCE

FORT WORTH

Heart of the Mid-Continent Area

Oscar Shores, SE SE SE Section 7-60-36w, about 2 miles west of Fillmore in Andrew County. Location is on a 3,000-acre block assembled by Derby Oil Co., the Shreveport operator taking 1,800 acres in a deal to drill the well. First heavy rotary tools for the basin were scheduled to be moved in within the next 2 weeks. Surface structure and closure was said to have been determined by gravity-meter survey.

Morrow & Rodgers No. 1 Cooley, SE SE NW Section 33-64-17w, Adair County, had a showing of oil at 871-86 ft., said by state geologists to be the best showing in the basin to date. Free gas blew from the hole when packer was pulled, but water interfered with further tests. Packer was being reseated.

While waiting on installation of electric motor and drilling of a water well at No. 1 Corrough, C SE SE Section 24-57-35w, Buchanan County, Bob Miller moved his crew to Guthrie County, Iowa, to spud Fletcher E. Hunt's No. 1 McConnell, SE SE Section 11-78-30. Previously, the Iowa wildcat was reported to have spudded but actually only the cellar had been dug. Miller contracted to set 10-in. casing for the test at about 700 ft., after which his crew was to be brought back to St. Joseph to resume work at No. 1 Corrough, now shut down at 96 ft., where 15-in. pipe was set.

Pawnee Royalty Co.'s No. 1 Boice, C NE NE Section 18-1n-16e, deep Forest City basin test in Richardson County, Neb., was shut down at approximately 1,600 ft. The crew was underreaming.

Carter Oil Co. was reported moving in core drill for a slim-hole test in Section 10-6-19, Atchison County, Kansas, sector of the basin. The area has been worked with the seismograph. The company was said to have bought all royalty on a 10-acre tract around the location.

Missouri completions follow:

Pabelo Development Co.'s No. 1 Bartlett, CWL SE NW NE Section 34-52-32w, Clay County, Missouri, was completed for an estimated 170,000 cu. ft. of gas after plugging back from total depth of 755 ft. to 636 ft.

Wright & Turner's No. 1 Turner, C NW NW Section 27-59-9w, Shelby County wildcat, was reported abandoned at 650 ft., total depth. It based Mississippi lime at 538 ft., based Calloway formation at 600 ft., and a showing of oil was reported at 612 ft. It had been shut down for several weeks.

H. V. Elwell, Ward McGinnis and others' No. 1 Maple, NE SW SE Section 3-62-26w, Harrison County wildcat, had a very slight showing of oil in St. Peter sand at 1,722-29 ft., topped Arbuckle lime at 1,805 ft., and was dry and abandoned at 1,907 ft., total depth.

Mayson Oil Co.'s No. 1 McGonigle, CNL SE NW Section 20-63-13w, east of Kirksville, Adair County, failed to develop production by shooting and acidizing and was dry and abandoned at plugged-back depth of 1,431 ft. It had St. Peter sand at 1,238-94 ft., Everton zone 1,294-1,331 ft., Arbuckle lime 1,331-41 ft.

EXPANSION JOINTS

. . . that function without calling for maintenance
. . . that withstand temperatures up to 900° F.
. . . that are built for high pressure work

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BADGER *Stainless Steel* EXPANSION JOINTS

Typical use of the Badger Non-Equalizing Expansion Joint. This type of joint is ideal for absorbing certain vibrations as well as taking care of limited expansions in the lower pressure ranges (vacuum to 25 lbs.). Bulletin 200 gives full details.

Badger Expansion Joints for use in refineries and pumping stations are of the corrugated type. This means "no packing". It means "no maintenance".

Stainless Steel as well as deoxidized copper joints are available, thus taking care of a wide range of temperatures, pressures, and corrosion problems. All Badger Joints are heat-treated throughout fabrication to derive fullest benefits from this important metallurgical step.

And the Directed Flexing feature should not be overlooked. It's a predetermined, controlled, flexing movement that limits and distributes flexing stresses.

Badger Expansion Joints are ideal for oil industry service.

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Agents in Principal Cities

Illinois Fields

(Continued from Page 78)

qt. shot, swabbed 192 bbl. Carter's No. 4 Yolton, NE NE NE Section 7-7n-3e, total depth 1,510 ft., 20-qt. shot, swabbed 184 bbl. of oil and 25,000 cu. ft. of gas. Carter's No. 6 McClain, SE SW NW Section 4-7n-3e, total depth 1,559 ft., 20-qt. and 10-qt. shots, swabbed 380 bbl. Carter's No. 4 Finch, NW NE SW Section 4-7n-3e, total depth 1,540 ft., casing ripped at 1,450-81 ft., swabbed 132 bbl.

In southern Fayette County Powell & McClory's No. 1 Woolin, NE NW NE Section 13-5n-2e, a wildcat, was dry and abandoned. McClosky lime top at 2,002 ft., total depth 2,124 ft.

Clay County

In Clay County Pure Oil Co.'s No. 5 Behymer A, NW cor. NE NE NE Section 4-1n-8e, pay at 3,033-39 ft. and 3,083-85 ft., acidized with 5,000 gal., flowed 459 bbl. Minerva Oil Co.'s No. 1 J. Smith, SW SW NW Section 23-5n-5e, dry and abandoned at 2,474 ft. Burnett & Evans' No. 1 Liggett, SW NE SE Section 17-5n-5e, old well plugged back from 2,445 ft. to 2,320 ft., pumped 15 bbl. from Aux Vases sand. Pure Oil Co.'s No. 5 Stanford, C E½ NE SW Section 32-3n-8e, total depth 3,130 ft., plugged back to 3,055 ft. and acidized with 5,000 gal., pumped 84 bbl. J. W. Leonard and others' No. 1 Raley, C W½ NW SE Section 13-3n-7e, dry and abandoned at 3,018 ft. Robey Drilling Co.'s No. 1 DeHart, C W½ SE SE Section 9-3n-7e, dry and abandoned at 2,981 ft.; Benoist sand topped at 2,805 ft. Orchard Oil Co.'s No. 2 Norton, NE SE SW Section 7-2n-8e, total depth 3,095 ft., plugged back to 3,047 ft., pumped 200 bbl. of oil in 10 hours. Pure Oil Co.'s No. 3 Holman, C E½ W½ NE Section 6-2n-8e, total depth 3,195 ft., acidized with 5,000 gal., flowed 311 bbl. Stanford Oil & Gas Co.'s No. 1 Norton B, C E½ NE SW Section 12-2n-7e, total depth 3,155 ft., twice acidized with 5,000 gal., pumped 73 bbl. of oil and 75 bbl. of salt water. Pure Oil Co.'s No. 1 Stanford A, C E½ SE NE Section 12-2n-7e, Fredonia pay at 3,039-52 ft., flowed 710 bbl. Pure's No. 2 McCracken A, Aux Vases sand at 2,936-49 ft., and Fredonia lime pay at 3,067-72 ft., lime, acidized with 1,000 gal. and 5,000 gal., pumped 49 bbl. of oil and 59 bbl. of water.

In Edwards County Magnolia Petroleum Co.'s No. 1 Etheridge, SW cor. NW SW Section 18-3s-14w, pays at intervals from 3,067 ft. to 3,130 ft., acidized with 1,000 gal. and 2,000 gal., pumped 16 bbl. of oil and 2½ bbl. of water. John Pugh's No. 1 Smith, NE NW NW Section 10-3s-14w, dry and abandoned at 2,668 ft. Drill-stem test at 2,636-68 ft., recovered 1,918 ft. of mud and salt water in 30 minutes. H. K. Biddle's No. 1 Schroeder, SW SE SW Section 22-2s-14w, St. Louis lime at 3,070 ft., total depth 3,082 ft., dry and abandoned.

In White County Superior Oil Co.'s No. 1 Ford and others, SW NE NE Section 9-5s-14w, Waltersburg sand at 2,175-93 ft., pumped 150 bbl. Penn Illinois Oil Co.'s No. 1 Pyle, SE SE NE Section 12-6s-8e, Fredonia lime pays at 3,082-87 ft., 3,100-02½ ft., and 3,112-16 ft., pumped and flowed 423 bbl. in 24 hours.

In Hamilton County W. C. McBride, Inc.'s No. 1 Hurburgh, SE NE SE Section 35-5s-6e, St. Louis lime at 3,338 ft., total depth 3,500 ft., dry and abandoned.

In Lawrence County Mark and others' No. 1 White, SW SE SW Section 8-4n-10w, an old well deepened from 1,070 ft.; Buchanan sand at 1,112-42 ft., dry and abandoned. J. Kesl and others' No. 2 Gillespie, C NE SW Section 13-4n-11w, a 10,000,000-cu. ft. gasser completed September 12 of this year, depleted to such an extent, it was plugged and abandoned. M. G. Johnson's No. 1 Downey, C E½ SE NW Section 22-3n-11w, dry and abandoned at 3,576 ft. McClosky lime was topped at 1,855 ft. Ullan & Purnell's No. 1 A. B. Jordan, NE cor. NW NW Section 8-2n-11w, McClosky lime at 1,860-66 ft., a 3-bbl. well.

In Clark County Paul H. Cull's No. 1 Montgomery, SW SE SW Section 5-9n-14w, was dry and abandoned at 1,220 ft.

Oklahoma Operations

By DAL DALRYMPLE

Wildcat Near Jones Uncovers New Cleveland-Sand Oil Pool

Cleveland sand was proven productive late in the week when Hall-Briscoe, Inc.'s No. 1 Thompson, SW SW NE Section 28-13-1e, east of Jones, Okla., made several head flows up the derrick to open a new oil pool in Oklahoma County. Estimates of production ranged from 200 to 500 bbl. of oil daily, but potential determination awaited additional tests.

The wildcat was drilled to 6,058 ft. is salty, white Wilcox sand. It was plugged back and tested in the Oswego zone at 5,134-85 ft., where it showed water and gas. Plug then was set at 4,850 ft., casing was perforated in Cleveland-sand zone at 4,796-4,808 ft., and the well was swabbed at the rate of 10 to 12 bbl. of oil an hour. After a shot it headed over the derrick, flowing for 5 minutes. The hole bridged around 4,797 ft., the shot apparently damaging casing in the perforated section. Even so, the hole filled with oil and the well made additional short head flows. The oil tested 35.7° gravity, corrected to 60° temperature. Operators were attempting to knock out the bridge or swedge casing so completion tests could be made. Observers generally believe the wildcat is on the west side of the structure; some believe the structure may be a shallow dome, with the possibility of production being found in Simpson-Wilcox pays higher on the structure.

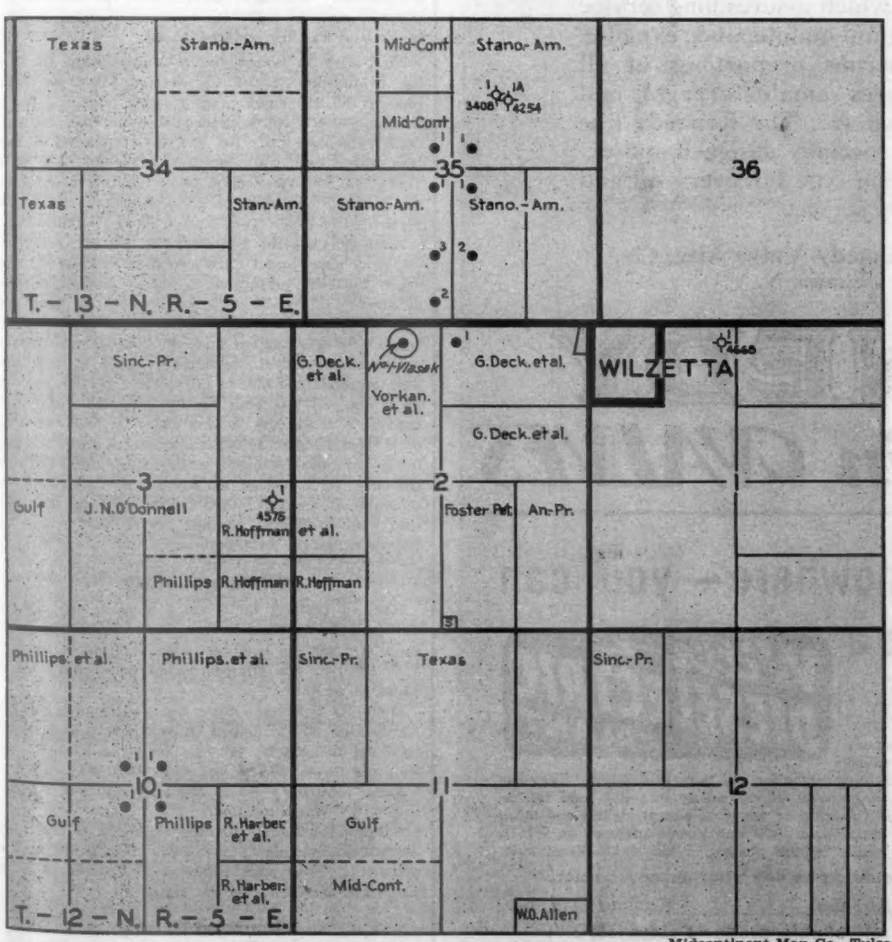
The Hughes County pool opener, Stanley Rogers and others' No. 1 Scott, NE SE NW Section 23-6-8, was being put on the pump after showing for 150 to 300 bbl. of oil daily from Booch sand at 2,646-76 ft., total depth. It is southeast of the Sasakwa area. Locations for additional tests in the area were staked, and a wildcat location was announced about 2¼ miles southward in Section 35-6-8.

The Wilzetta area in Lincoln County barged into the oil limelight when Yorkan Production Co. and others' No. 1 Vlasek, NE NW Section 2-12-5, east of the town of Wilzetta, flowed 1,618 bbl. of 39-gravity oil in 24 hours after acidizing. It was shut in for tankage. Production was from Hunton lime at 4,214-24 ft., total depth. The map shows relation of the new producer to other wells in the Wilzetta pool and the South Wilzetta pool in Section 10-12-5.

A new productive area near the old Earlsboro field in Pottawatomie County apparently has been opened at S. D. Butcher's No. 1 Miskish, SW SW NW Section 36-10-4. It was drilled to 4,535 ft. in sand, plugged back to 4,496 ft. and perforated casing at 4,265-81 ft. It had a hole full of oil and was shut in for erection of tanks after it had made one flow.

Work was started at a wildcat in Dewey County, in the western part of the state, at Magnolia Petroleum Co.'s No. 1 Feikes, C SW SW Section 31-18-14w, southeast of Taloga. Pits and cellar were being dug. It is to be a Wilcox-sand test, with the objective expected at around 8,000 to 9,000 ft. Location is on a 9,600-acre block of leases. It is on an original surface structure, which has been core-drilled and explored by seismograph.

A Wilcox-sand test on an old structure was started at Eason Oil Co. and others' No. 1 Wells, NE NW NE Section 15-16-2w, Logan County. Location is on a 3,840-acre block adjoining Guthrie townsite. The block was assembled during the past year by O. A. Walter of Guthrie. The Corporation Commission has ordered 10-acre well spacing for the area, including acreage in Sections 9, 10, 11, 14, 15, and 16-16-2w.



Midcontinent Map Co., Tulsa

The Wilzetta area, Lincoln County, was in the Oklahoma oil spotlight the past week when Yorkan Production Co.'s well in C N½ NE NW Section 2-12-5, flowed 1,618 bbl. of high-gravity oil in 24 hours

Estimated Daily Production

Estimated daily production for Oklahoma for the week ending October 7, and for the preceding week was as follows:

	Barrels	
	Oct. 7	Sept. 30
Allen	5,575	5,625
Billings	5,725	5,775
Burbank	7,200	7,225
South Burbank	8,150	8,175
Balance Osage	17,350	17,250
Blackwell district	3,375	3,475
Bristow-Slick	6,500	6,575
Chandler	1,350	1,375
Crescent	2,625	2,675
Cromwell	2,975	2,950
Cushing-Shamrock	9,350	9,550
Duncan	3,675	3,775
Edmond	4,025	4,050
Fish	3,650	3,650
Fitts	22,350	20,550
Jesse	1,850	1,875
Graham-Fox	3,175	3,225
Gray	650	625
Healdton	8,900	8,950
Hewitt	3,625	3,675
Keokuk	2,825	2,875
Konawa	1,050	1,075
Lucien	8,225	8,300
Moore	2,550	2,575
Oklahoma City	91,750	75,725
Olympic	1,600	1,675
Ramsey	4,250	4,250
Sasakwa	1,025	1,050
Sholem-Alechem	2,525	2,550
Seminole district:		
Bowlegs	7,225	7,275
Carr City	2,350	2,425
Dora	2,650	2,700
Earlsboro	4,075	4,125
South Earlsboro	425	450
East Earlsboro	3,225	3,275
Little River	5,825	5,875
East Little River	525	550
Maud	500	525
Mission	1,125	1,175
Seminole	6,375	6,475
East Seminole	1,125	1,150
Searight	1,650	1,650
Total Seminole	37,075	37,650
St. Louis-Pearson	26,250	26,700
Tatums	1,050	1,050
Tonkawa-Garber-Thomas	3,850	3,875
Wewoka	1,625	1,650
Yale-Jennings	3,425	3,475
Other pools	91,275	92,025
Total Oklahoma	402,425	387,525

Wildcat Operations

Blackwell Oil & Gas Co. failed to find production in a Pontotoc County area northeast of the Fitts field and its No. 1 Hamilton, NW NE SW Section 16-3n-8, was dry and abandoned at 2,076 ft. Cromwell sand, topped at 1,821 ft., carried salt water.

Rogers' No. 1 Craig, SE SE SE Section 4-6-8, wildcat southeast of the Fish pool and northeast of Sasakwa, in Hughes County, had Cromwell sand at 3,308 ft. and was bottomed at 3,350 ft. After shooting and acidizing, it swabbed about 5 bbl. of oil in 24 hours, but water intruded and it was abandoned.

Sands Petroleum Co.'s No. 1 Misselda, NW NW SE Section 13-7-5, Seminole County wildcat, had Earlsboro zone at 3,105 ft., was drilled to 3,144 ft., and was dry and abandoned.

Blackwell Oil & Gas Co.'s No. 1 Davis, SE SE SE

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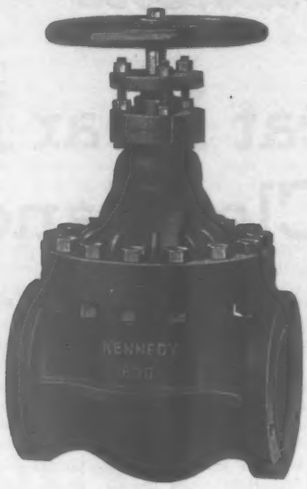

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Section 24-18-1e, wildcat south of the Ramsey area, Payne County, found first Wilcox sand at 4,944-85 ft., second Wilcox sand 5,055-66 ft., total depth, and was dry and abandoned.

E. W. Marland and others' No. 1 Crooks, SW SW SE Section 21-26-3e, wildcat in southeastern Kay County, had a nonproductive sand at 1,592-1,624 ft., and was dry and abandoned at 1,627 ft., total depth.

Dean Brothers' No. 1 Emery, NE NE NE Section 30-3s-13w, Cotton County, wildcat, found dry sand at 1,420-32 ft., Cisco formation 2,315 ft., and was dry and abandoned at 2,503 ft.

Magnolia Petroleum Co. was moving in material for a 5,000-ft. wildcat test at No. 1 Amyx, NW SW SE Section 17-3s-16w, about 4 miles southwest of Hollister, Tillman County.

Other new wildcats included: Wood Oil Co.'s No. 1 Harjo, NW SW SE Section 35-6-8, in Hughes County, northeast of the Allen field, location; Summit Drilling Co.'s No. 1 Percival, SE SE SE Section 24-12-3e, west of Meeker, Lincoln County, location; Kirk-Green-Way, Inc.'s No. 1 Doran, NW NW SW Section 32-19-2e, northeast of the Ramsey pool, Payne County, rigging up rotary tools; Crowe's No. 1 Gosting, SE SE SE Section 14-27-2e, about 4 miles south of Newkirk, Kay County, rig.

Pottawatomie County

Stanolind Oil & Gas Co.'s No. 3 Rushing, SW SW SW Section 32-11-4, Shawnee pool, Pottawatomie County, was completed for daily potential of 135 bbl. of oil. It entered Earlsboro zone at 4,355 ft., sand 4,369 ft., total depth 4,457 ft.

In the St. Louis district Mudge Oil Co.'s No. 1 Deatheridge, NE NE SE Section 20-7-4, found Earlsboro sand a 3,581 ft., total depth 3,616 ft., plugged back to 3,597 ft., was shot and pumped 56 bbl. of oil daily.

Amerada Petroleum Corp.'s No. 2 Mitchell, SE NE NE Section 3-6-4, an old well deepened from 4,283 ft. to dolomite at 4,233-47 ft., total depth, plugged back to 4,298 ft. and pumped 11 bbl. of oil and 696 bbl. of water in 24 hours.

Magnolia Petroleum Co.'s No. 8 Youts, SE SW SW Section 20-7-5, drilled Calvin sand at 2,880-91 ft., plugged back to 2,870 ft., perforated casing without result, and was dry and abandoned.

New work in Pottawatomie County: Alma Oil Co.'s No. 2 Hudson, NE NE SE Section 24-6-4, set 10-in. pipe at 93 ft., rigging up rotary; Iglehart's No. 2 Zoellar, SW NW NE Section 4-6-5, cellar and pits; Magnolia Petroleum Co.'s No. 4 Fyke C, NE SE SE Section 20-7-5, twin well, location; Alma Oil Co.'s No. 4 Youts, NE SW SW Section 28-7-5, drilling below 1,730 ft.; Yorkan Production Co.'s No. 2 Sauter, NW SE SE Section 31-11-4, set 12-in. pipe at 83 ft., building rig.

Alma Oil Co.'s No. 1 Hudson, SE NE SE Section 24-6-4, Gray area, found Earlsboro zone at 2,864 ft., total depth 2,930 ft., perforated casing at 2,881-87 ft., shot at 2,864-87 ft., swabbed 25 bbl. of oil in 24 hours and was being put on pump. T. E. Iglehart's No. 1 Curley, NE SE NW Section 4-6-5, St. Louis district, topped dolomite at 4,120 ft., total depth 4,165 ft., was acidized, swabbed 330 bbl. of oil and 462 bbl. of water in 18 hours and was shut in. Phillaine Oil Co.'s No. 3 Garrett, NW SE NW Section 28-7-4, an old well deepened from 4,146 ft. to Wilcox sand at 4,272-87 ft., total depth, swabbed 1,070 bbl. of oil in 24 hours. Harwood Oil Co.'s No. 2 Brister, SE SW NE Section 29-7-5, had dolomite at 4,135 ft., total depth 4,218 ft., was acidized with 5,000 gal., pumped 350 bbl. of oil and 250 bbl. of water the first 24 hours.

Pontotoc County

Konawa Drilling Co.'s No. 5 Masters, SW SW SE Section 14-2n-7e, Fitts district, Pontotoc County, found sand at 1,390 ft., was bottomed at 1,413 ft., shot at 1,395-1,410 ft., and pumped 50 bbl. of oil and 5 bbl. of water in 24 hours.

Magnolia Petroleum Co.'s No. 3 Chandler, SW NW NE Section 35-5-7, topped Gilcrease sand at 2,241 ft., total depth 2,253 ft., set 7-in. casing at 2,243 ft., was shot and flowed 325 bbl. of oil in 24 hours.

Same company's No. 4 Chandler, SE NW NE Section 35-5-7, was a location.

Simpson-Roodhouse Drilling Co.'s No. 1 Thompson, SW SW SE Section 34-2n-7, Fitts district, had sand at 1,871-84 ft., was shot, swabbed 35 bbl. of oil in 24 hours and was being put on pump.

Seminole County

Culver & Burton's No. 1-B Swan, SE NE SW Sec-

(Continued on Page 96)

California Field Report

By
L. P. STOCKMAN

Montebello Deep Pay Being Left Undrilled Until Needed

LOS ANGELES, Calif., Oct. 9.—The relief in the production situation from declining drilling operations in the Montebello and Wilmington fields may be relatively short-lived although this depends upon how soon operators decide to proceed with deepening operations. In both fields deeper zones are known to exist and production can be stimulated at any time by additional drilling.

In an effort to stabilize crude-oil production, operators in the Long Beach Harbor section of the Wilmington field have retarded exploitation of the Ford zone more than a year by agreeing to refrain from drilling to that pay. It may be possible that deep-zone exploitation in the Wilmington field will get under way early in 1940, although a large part of the operators are hoping that deep drilling can be held off at least until the summer of 1940 at which time the market may be able to absorb the new production. This is especially important in view of the vote coming up in November on the Atkinson bill, because if this measure is approved it is not likely that the deep-zone development will be permitted unless some operator gets down to the pay before the measure could become effective. Most of the operators in the Long Beach Harbor section of the Wilmington field have adopted a constructive attitude and it may be expected that the Ford zone will be held back for several months. The same cannot be said with respect to deep drilling in the west end of the Montebello field, because as soon as La Merced zone begins to decline in production one or more wells may head down to the ninth zone within a short time.

There is very little similarity between conditions in the Montebello and Wilmington fields, and it is difficult to harmonize the attitude of operators. Wilmington produces very little gas whereas Montebello produces a large volume of gas and shows a very high gas-oil ratio. Also the unusual thickness of oil sand in the Wilmington field is conducive to long-lived production, but the productive zones in the Montebello field show a high flush production and then quickly lose their head and decline quite rapidly. Under these conditions it is advantageous to take production as fast as possible in the Montebello field and retard production in the Wilmington field commensurate with good production practice. Some operators in the Montebello field paid little attention to the Central Committee of California Oil Producers, and it was necessary to invoke the California gas conservation law to effect curtailment throughout the field. Under the present temporary injunction, gas production of the Montebello field is limited to approximately 46,000,000 cu. ft. per day, as the court has held that this production constitutes maximum efficient beneficial production and use. Operators having natural-gasoline plants and natural-gas pipe lines have "bent over backwards" in an effort to make available the largest possible market in order to maintain present conditions. This has enabled the court to increase the amount of permissible gas production and as long as this condition continues no operator can go into court and claim that he is being prevented from producing his fair share of the maximum gas outlet.

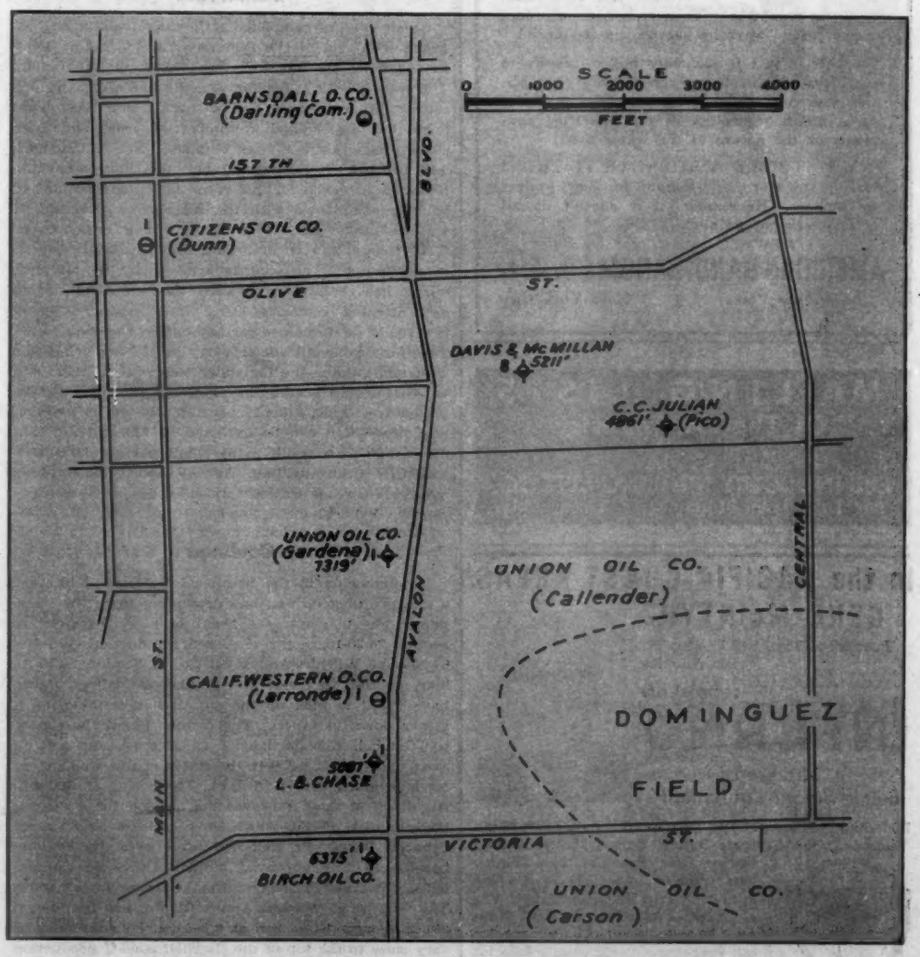
Montebello

The drilling peak was passed in the Montebello field about 2 weeks ago and as close as can be estimated the production peak of the lower La Merced zone occurred about October 1. Usually in fields that show high pressure an abrupt decline takes place immediately following the production peak but in Montebello production of the gas zone that immediately overlies the La Merced zone has offset the decline that normally would have taken place. Not all operators are producing the gas sand, but it is believed most wells completed from now on will be finished with that idea in mind. This gas sand has a high head and will prevent any great change in crude-oil production for several weeks at least. If the weather in southern California should turn cold within the next few weeks, operators in the Montebello field will be able to increase gas production due to the increased demand. This is important because it indicates the possibility that crude-oil production may show a temporary increase in November and December from the La Merced zone when gas demand increases. If this materializes operators will produce the gas sand to the maximum for lifting purposes and for sale with the result that crude-oil production of the La Merced zone will be stimulated. With one zone as yet untouched and the La Merced zone still in a semiflush condition, the Montebello field will continue to be an important factor in crude-oil production for several months.

There is no reason from a geological angle why there should not be several zones below La Merced. One such zone known to exist and which will probably be designated as the third La Merced zone, was found in No. 30 La Merced of Union Oil Co. several months ago, but was not produced in that well commercially. The zone did show enough, however, to indicate that it will be found commercially productive when exploited. Top of the third La Merced zone is approximately 500 ft. below the top of the second zone but this may vary one way or the other on top of the structure. Recent completions in the La Merced zone, which is now the objective of most drilling wells, have shown a declining tendency and with few exceptions have failed to show the "kick" that has characterized previous completions. Introduction of gas from the top member of the zone into the productive sand member is offsetting this decline in pressure of the lower La Merced zone. A month or so ago the lower La Merced showed a high gas-oil ratio and a large volume of gas with the upper La Merced gas zone blanked off behind a packer. It is now necessary to introduce gas from the gas sand to accomplish the same thing thus indicating that the lower La Merced has lost a considerable part of its pressure.

New Completions

That gas from the upper La Merced zone is being used in producing the lower La Merced wells in the Montebello field is evidenced this week by the completion of No. 4 Manz of McVicar & Rood. This well



The productive Miocene is rising toward the west in the Dominguez field of Los Angeles Basin. California Western Oil Co. has started an outpost west of production and practically all acreage for several blocks west of Main Street has been leased

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was brought in flowing 480 bbl. of clean 39.5-gravity oil and 8,190,000 cu. ft. of gas daily from the lower La Merced, with bottom of the hole at 7,620 ft. The well was finished with a string of 7⅝-in. cemented at 7,520 ft., a 5⅜-in. liner landed at 7,619 ft. and perforated at 7,524-7,619 ft. and 7,499 ft. of 2½-in. tubing. The 7⅝-in. was subsequently gun-perforated at 7,410-40 ft. opposite the productive high-head gas zone. No. 4 Manz was completed flowing through open line but after completion was beaned down to 16/64-in. behind which it showed a tubing pressure of 1,070 lb. and a casing pressure of 2,000 lb. Kern Oil Co. extended the northern limits of production in the west end of the field by completing No. 30 Monterey, flowing 75 bbl. of 34.5-gravity oil and 201,000 cu. ft. of gas per day from the Masser zone and 735 bbl. of 34.8-gravity oil and 2,215,000 cu. ft. of gas daily from the La Merced zone. The intervening seventh zone showed all water thus indicating that the outer limits of commercial production have been established for the seventh zone.

British American Oil Producing Co. completed an excellent well when No. 1 Ryder, southwest of Beverly and Montebello boulevards, was brought in flowing 760 bbl. of 34.9-gravity oil and 4,000,000 cu. ft. of gas per day from La Merced zone, with bottom of the hole at 7,685 ft. Top of the 8-1 zone was cored at 7,484 ft. and the 7-in. water string was landed and cemented at that point. Two outposts cored top of La Merced zone last week and both should be tanking oil within 10 days. These two wells are No. 2 trustee of Fullerton Oil Co. in the extreme eastern end of the Montebello extension and No. 1 Community of Star Petroleum Co. in the extreme southwestern end of the structure. The former topped the pay at 7,514 ft. and after the hole had been drilled ahead to 7,600 ft. the company landed a string of casing. The latter cored top of the oil sand at 7,415 ft. and a 7-in. water string was immediately landed at 7,500 ft. This well is about 10 ft. lower structurally than No. 30 Merced of Union Oil Co. and No. 1 trustee of Fullerton Oil Co., both in the extreme eastern end of the structure.

Dominguez

Union Oil Co. completed a flowing well in the extreme west end of the Dominguez field and in doing so extended the northwestern limits of production. This was No. 72 Callender, a north-line well, and offsetting property once drilled by General Petroleum Corp. but quitclaimed a number of years ago after small production had been obtained. No. 72 Callender was brought in flowing 90 bbl. per hour from the Miocene at 7,400 ft., but was immediately pinched back in compliance with the curtailment program. It was finished with a 7-in. water string cemented at 6,740 ft. and 679 ft. of 5½-in. liner including 660 ft. of perforated. The well indicates that the Miocene, which has been rising toward the west, appears to be flattening out, indicating that production may eventually be developed farther out on the west flank. The Gardena Syndicate property of 157 acres lies due west and adjoins the Callender lease on the west and unless faulting occurs the Gardena parcel should be productive. Independent operators are of the opinion that production can be expected as far east as Main Street and as a result many small parcels have been leased for future drilling. At last reports the Gardena Syndicate acreage was still unleased due to what many consider exhorbitant demands.

Coalinga

Developments in the Southeast Coalinga field were a mixture of good and bad depending upon the viewpoint. The two outposts, No. 1 of E. A. Parkford in Section 25-20-15, south of present production, and No. 64-30-B of Wilshire-Annex Oil Co. in Section 30-19-16, between the Northeast and Southeast Coalinga fields, have failed to pick up the pay and have taken on a rather doubtful aspect. The former found the top of the Gatchell zone included 6 ft. of gray sand and oil sand, and thus at 8,230 ft. the status of this well should be determined within 10 days. The coring of the thin streak of oil sand improves the outlook for Universal Consolidated Oil Co. which holds a lease on 80 acres between Parkford's well and present production and because of this improved outlook Universal Consolidated Oil Co. will soon undertake development work. The wildcat of Wilshire-Annex Oil Co. has not shown anything promising, and at 8,265 ft. the bit should be very close to the top of the Gatchell zone if production is to be secured. This well will indicate definitely whether there is any structural affinity between the Northeast and Southeast Coalinga fields.

Two flowing wells were completed in the Southeast Coalinga field in the past week and both registered large computed potentials but were permitted to produce only a short time before being brought under strict curtailment. These two new wells were No. 42-7-F of R. S. Lytle in Section 7-20-16, and No. 3 Cagle of Superior Oil Co. The former was completed flowing 1,850 bbl. of clean 32.4-gravity oil per day from the Gatchell zone with bottom of the hole at 7,622 ft. and the latter was finished flowing 3,580 bbl. of clean 32.3-gravity oil daily from 7,085 ft. No. 3 Cagle extended the productive limits of the Southeast Coalinga field about 1,250 ft. northwest, and proved up some additional locations. Top of the Kreyenhagen was logged at 5,543 ft., top of the grit zone was cored at 6,383 and top of the Gatchell oil sand was found at 6,851 ft. A total of 234 ft. of oil sand is open to production. No. 42-7-F of R. S. Lytle cored top of the Gatchell oil sand at 7,020 ft. and the hole was finished with 6,987 ft. of 8⅝-in. casing as a water string.

Amerada Petroleum Co. extended the northern limits of production in the Northeast Coalinga field by completing No. 5-17 S.P.L. in Section 17-19-16, flowing 450 bbl. of 27.2-gravity oil per day from 8,230 ft. This well, which is about 1,300 ft. north of production, was brought in flowing through an 11/64-in. bean which indicates that the initial only represents a very small part of its potential production. The well has 73 ft. of oil sand in addition to the top part of the zone which was blanked off to reduce gas production. The hole was finished with a 7-inch water string cemented at 7,969 ft. and 318 ft. of 5-in. liner which was cemented through perforations at 8,157 ft. and which carried 73 ft. of perforated landed on bottom. No. 5-17 S.P.L. is the third well finished by Amerada in the Northeast Coalinga field, which it discovered. Union Oil Co., Standard Oil Co. and Bandini Petroleum Co. each have one producing well to their credit in this field. All four operators have erected new derricks for additional work.

Wilmington

In the Wilmington field Signal Oil & Gas has com-

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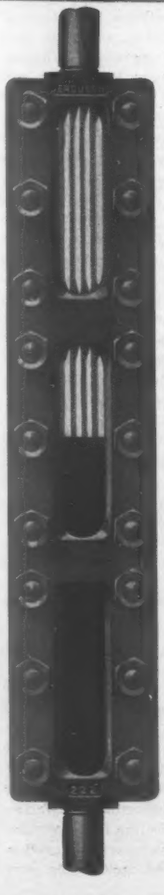

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	October 1		September 23			
Intercoastal-domestic—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	130,147	18,592	771,206	777,914
Fuel oil	65,970	9,424	66,575	9,511	1,744,993	.....
Diesel and gas oil	.....	.....	.....	.....	163,501	.....
Gasoline	.....	.....	189,087	27,012	2,621,213	2,437,678
Kerosene	.....	.....	.....	.....	194,850	257,005
Foreign exports—						
Crude oil	413,179	59,026	63,501	9,072	11,628,695	16,986,222
Fuel oil	351,813	50,259	304,961	43,566	6,942,862	6,855,256
Diesel and gas oil	179,614	25,659	233,048	33,293	5,797,108	4,658,810
Gasoline	448,802	64,115	174,640	24,949	6,016,551	5,946,771
Kerosene	.....	.....	.....	.....	1,295,701	852,318
Lubricants	.....	.....	37,624	5,375	127,367	173,388
Coastwise-domestic—						
Crude oil	229,604	32,801	116,237	16,605	9,608,732	9,146,504
Fuel oil	222,931	31,847	14,542	2,077	7,527,524	8,779,116
Diesel and gas oil	53,398	7,628	30,884	4,412	1,722,652	1,175,680
Gasoline	607,247	86,750	406,565	58,081	12,587,737	11,196,259
Kerosene	15,257	2,180	29,212	4,173	366,024	202,369

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Fuel oil	.....	.....	.....	.....	124,055	.....
Diesel and gas oil	.....	.....	.....	.....	69,550	196,644
Gasoline	.....	.....	.....	.....	.....	25,409
Kerosene	.....	.....	.....	.....	68,954	16,124
Asphalt	.....	.....	.....	.....	425,845	490,039
Lubricants	5,336	762	.....	.....	24,870	16,905
Foreign exports—						
Crude oil	267,467	38,210	164,238	23,463	4,317,590	4,486,735
Fuel oil	180,895	25,842	60,939	8,706	2,308,756	2,127,889
Diesel and gas oil	7,202	1,029	59,636	8,519	2,134,716	2,219,422
Gasoline	158,602	22,657	53,547	7,650	2,517,747	4,502,574
Kerosene	6,973	996	.....	.....	404,242	696,099
Asphalt	.....	.....	7,232	1,033	14,151	56,258
Lubricants	3,060	437	4,156	594	445,989	404,538
Other finished oil	.....	.....	.....	.....	469	.....
Coastwise-domestic—						
Fuel oil	129,355	18,479	152,388	21,770	5,061,717	4,531,878
Diesel and gas oil	29,645	4,235	42,140	6,020	990,427	1,164,744
Gasoline	111,308	15,901	143,815	20,545	6,246,391	6,040,447
Kerosene	9,214	1,316	21,237	3,034	671,304	421,045

pleted No. 3 S.P., a tideland well, flowing 150 bbl. of 17.5-gravity oil, cutting 5 per cent, from the Ranger zone and 405 bbl. of 24.5-gravity oil daily from the Terminal zone. This well was finished with an 11¾-in. water string cemented at 2,518 ft. and an 8⅝-in. liner landed at 4,105 ft. and cemented through perforations at 3,025 ft. and at 3,615 ft. Perforations in the 8⅝-in. were at 2,515-2,930 ft., 3,025-3,577 ft. and at 3,615-4,105 ft. The 4,078 ft. of 2½-in. tubing had a packer at 2,937 ft.

Union Pacific Railroad Co. completed No. 117 flowing 290 bbl. of clean 21.1-gravity oil per day from the Terminal zone with bottom of the hole at 3,112 ft. This well flowed through at 32/64-in. bean and showed a tubing pressure of 200 lb. and a casing pressure of 920 lb. The hole was finished with a 7-in. water string cemented at 2,823 ft. and 498 ft. of 4¾-in. gravel-packed liner landed at 3,112 ft. and perforated at 2,616-17 ft., 2,637-2,801 ft. and at 2,820-3,112 ft. Although Long Beach Oil Development Co., operating for the city of Long Beach, Hancock Oil Co. and Union Pacific Railroad Co. all have erected additional rigs, it has become evident that future drilling will be along conservative lines. This is especially true of Long Beach Oil Development Co. which has just about completed all first-line offsets to producing wells and will proceed to develop submerged tideland acreage farther out beneath the ocean.

Los Angeles Basin

In the Potrero field of Los Angeles County, Basin Oil Co. completed No. 5 in Section 34-2-14, flowing 120 bbl. of 34.4-gravity oil through an 18/64in. bean behind a tubing pressure of 250 lb. and a casing pressure of 720 lb. from the relative shallow depth of 2,941 ft. The well was finished with an 8⅝-in. cemented at 2,941 ft. and gun-perforated opposite a preselected zone. This shallow zone has been known to exist in the Potrero field for several years but it took Basin Oil Co. to show that commercial production could be secured from any of the several thin zones by careful work. In the Rosecrans field of Los Angeles. Barnsdall Oil Co. made a formation test in No. 1 Darling Community at 8,720-8,846 ft. but failed to secure a natural flow. Previously a formation test at 8,512-96 ft. with the tester open for 35 minutes resulted in a recovery of two stands of clean 29.4-gravity oil and six stands of oil mud.

Kern County

Shell Oil Co., Inc., is believed to have established the outer limits of production in the Canal field as No. 32-14-A Kern County in Section 14-30-25, was good for only 330 bbl. of 34.1-gravity oil per day on a natural flow from the Stevens zone at 8,285 ft. This well is in the extreme northwestern end of the structure and is only about 750 ft. away from a dry hole drilled some time ago and before existence of the field was known.

In the Round Mountain field of Kern County, Vedder Petroleum Co. completed No. 1 Larkin in Section 12-28-28, pumping 306 bbl. of relatively clean 14.4-gravity oil daily from 1,886 ft.

In the Edison field, Petrex, Inc., completed No. 2 Metro in Section 6-30-29, flowing 60 bbl. of 16.5-gravity oil cutting 3 per cent from 4,206 ft. and this completion may result in the starting of several wells in the near future. No. 2 Metro proves up a limited area in the northwestern end of the Edison field. The well which was finished with an 8⅝-in. water string cemented at 2,446 ft. and 1,800 ft. of 6⅝-in. liner landed on bottom and perforated at 4,006-4,206 ft., was brought in flowing through a 1-in. bean behind a tubing pressure of 150 lb. and a casing pressure of 500 lb. The liner was cemented through perforations at 3,990 ft. and the hole finished with 3,975 ft. of 2½-in. tubing. In the Mountain View field, Hogan Petroleum Co., first operator to develop commercial production in the field, has completed No. 4 Peters in Section 5-31-29, pumping 290 bbl. of clean 23.4-gravity oil per day from 5,500 ft. This well was carried down to 5,592 ft. but was plugged back because of bottom water and the hole finished with a 7-in. water string cemented at 5,470 ft. and 40 ft. of 5½-in. liner landed at 5,500 ft. and perforated at 5,475-5,500 ft.

West of the Buena Vista Lake gas field, Richfield Oil Corp. found a gas sand in No. 81-36 B.V.A. in Section 36-31-25, at 5,580 ft. and the company has landed a string of 11¾-in. casing at 5,580 ft. This well on a formation test at 5,405-5,580 ft. and open 18 minutes resulted in a blow of gas estimated at the rate of 12,500,000 cu. ft. daily. This well, which was started as a deep test to be carried down to the Stevens zone, has apparently found a gas accumulation of commercial importance but for the present the zone will be placed behind the 11¾-in. It may be produced later if the wildcat fails to secure commercial oil production. In the Midway-Sunset field, National Oil Co. completed No. 33 in Section 35-32-23, pumping 130 bbl. of 15.2-gravity oil cutting 5 per cent and the Texas Co. completed No. 35 in Section 32-32-24, pumping 201 bbl. of 22.8-gravity oil cutting 2 per cent. The former was bottomed at 2,409 ft. and latter at 3,207 ft.

In the Gato Ridge field of Santa Barbara County, the Petrol Corp. has completed No. 5-21 Magenheimer in Section 9-8-32, pumping 1,060 bbl. of relatively clean 14.2-gravity oil per day from 4,057 ft. This new well was finished with 2,140 ft. of 8⅝-in. liner including 563 ft. of perforated landed at 4,053 ft. and 3,460 ft. of 4½-in. tubing.

East Texas A.P.I. Chapter

The East Texas Chapter of the A.P.I. met in Kilgore, October 10, for the first fall meeting. Roger Hutchings, director of public relations for the institute in New York, Woody Erwin, National Tank Co. and J. R. D. Eddy, director of industrial education, were speakers. The meeting was preceded by a dinner given in honor of the speakers.

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See Pages 1564-65 COMPOSITE CATALOG

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Rocky Mountain Area

By
T. R. INGRAM

Deeper Drilling to Tensleep Sand Yields 3,600-Bbl. Well

DENVER, Colo., Oct. 9.—Operations in the northern Rocky Mountain area are slowing down in anticipation of winter. Only four new operations were reported, one in Lance Creek, one in La Barge, and one in Osage, in Wyoming, and one in the Kevin-Sunburst field in Montana.

Best completion of the week was the Sinclair-Wyoming Oil Co.'s No. 12-B Wertz, on Wertz dome, Carbon County, Wyoming, for 3,607 bbl. from the Tensleep. The Osage field had three shallow completions, all dry holes. Cut Bank, in Montana, had one completion in A. B. Cobb & Co.'s No. 1 Vasboe, in North Cut Bank. a small gas well in the Sunburst. Pondera, Montana, reported a 27-bbl. well in the Pondera Oil Syndicate's No. 1 Haber, only well completed in the field this year. In Kevin-Sunburst, Art Crabtree's No. 1 Thompson was dry and abandoned; the G. & A. Oil Co.'s No. 13 Goeddertz is pumping 20 bbl. per day; and LeMac Oil Co.'s No. 1 Landowners, had water in the contact. Joe Minton's No. 1 Government, at La Barge, made 63 bbl. initially.

The Albert Development Syndicate's test on the Albert dome in Carbon County, showed for 4,000,000 cu. ft. of gas at 250 ft. Sublette County is having a lease play where the Union Oil Co. of California has taken government leases on 100,000 acres.

SOUTHEAST NEW MEXICO COMPLETIONS

The Loco Hills area of Eddy County continued the most active spot in Southeast New Mexico for another week. An abandonment was reported on the extreme northeast corner of the field, while a southwest edge test was completed for a producer.

Possibility of a 2½-mile south extension to Loco Hills was seen when L. E. Elliott's No. 1 Elliott, SE SE SE Section 24-18-29, drilled showings of oil and gas from 3,255 to 3,275 ft. The test was drilling ahead below 3,507 ft. as the week closed. This is the farthest south test in the field and would, if completed for commercial production, greatly expand the present defined limits. On the extreme northeast corner of the field, Allen, Pope & Fair's No. 4-A State, SE SW NW Section 36-17-29, is being put on the pump and estimated at the rate of 45 bbl. daily. This well is just north of R. W. Fair's No. 1-B State, SE NW SW Section 36-17-29, which was abandoned at 3,318 ft. The abandoned hole is between the new completion and the pool proper. In the southwestern part of the pool G. M. Cone's No. 1 Langford, NW SW Section 9-18-29, has been completed for 50 bbl. daily from pay at 2,435-75 ft.

Southeast of the Lovington pool in Lea County Coastal Development Co.'s No. 1 Caylor, NW NW SE Section 6-17-37, is still testing at a plugged-back depth of 4,785 ft. Based on previous flows the well is estimated at about 40 bbl. daily.

Prospective Pool Opener

Possibility of a new 1,800-ft. oil pool for the extreme north end of Eddy County was seen when B. H. Nolen's No. 1-X Isles, SE SE SE Section 17-16-29, drilled oil sand from 1,803 to 1,819 ft. The hole filled 300 ft. with oil in 12 hours. It was bailed 4 hours and oil rose 600 ft. in the hole. It was last reported shut down to set pipe. No. 1-X is 15 ft. west of No. 1 Isles, which was abandoned when pipe was lost in the hole at 1,630 ft. The operator skidded the rig 15 ft. west for the present operation.

Lea County

Continental Oil Co.'s No. 7-A-20 Jack, Section 20-24-37, flowed 184 bbl. in 8 hours with 1,020,000 cu. ft. of gas through 24/64-in. choke; pay at 3,500-95 ft.

Drilling & Exploration's No. 3-M State, Section 29-17-35, flowed 416 bbl. daily through ¾-in. choke, naturally, from pay from 4,465-4,590 ft.

Drilling & Exploration Co.'s No. 2-O State, pumped 105 bbl. daily after acid in pay from 4,575-4,716 ft.

Humble Oil & Refining Co.'s No. 7 Williams, Section 34-24-37, flowed 52 bbl. in 4 hours through ¾-in. choke after acid in pay from 3,422-3,530 ft.

Paul Love's No. 3 Pearsall, Section 33-17-32, flowed 25 bbl. daily through open tubing after shot in pay from 3,820-4,228 ft.

Magnolia Petroleum Co.'s No. 7 Carson, Section 33-21-37, flowed 118 bbl. in 10½ hours through ¼-in. choke after a shot at 3,650-3,780 ft.

Richmond Drilling Co.'s No. 4-A State, Section 2-25-37, flowed 146 bbl. in 12 hours through open tubing after a shot at 3,330-3,424 ft.

Eddy County

Carper and others' No. 1 Miller, Section 5-18-29, 86 bbl. oil daily after a shot in pay at 2,573-2,664 ft.

Carson & Kelly's No. 1 Berry, a wildcat in Section 22-17-27, dry and abandoned at 600 ft.

G. M. Cone's No. 1 Langford, Section 9-18-29, flowed 50 bbl. daily through open tubing after a shot at 2,435-75 ft.; plugged back from 2,725 ft.

R. W. Fair's No. 1 Brainard, Section 10-18-29, flowed 240 bbl. in 6 hours through open tubing after a shot at 2,610-22 ft. Estimated at 1,000 bbl. a day.

R. W. Fair's No. 1-B State, Section 36-17-29, dry and abandoned at 3,318 ft.

Franklin Petroleum Corp.'s No. 1 Canfield, Section 7-18-30, flowed 25 bbl. hourly through open tubing after a shot at 2,795-2,820 ft.

Grayburg Oil Co.'s No. 1 State, Section 36-17-29, flowed 240 bbl. in 12 hours through ¾-in. choke after a shot at 2,753-72 ft.

Me-Tex and others' No. 2 Yates, Section 5-18-29, flowed 300 bbl. daily through open casing after a shot at 2,571-2,632 ft.

Nash-Windfohr's No. 10-A Jackson, Section 24-17-30, flowed 70 bbl. hourly through open tubing after acidizing in pay from 3,475-3,527 ft.

Rhodes' No. 2 Swearingan, Section 14-18-31, pumped 16 bbl. daily after a shot at 3,475-3,535 ft.

Roeal Oil Co.'s No. 3 Saunders, Section 13-17-27, pumped 25 bbl. daily from pay at 528-53 ft.

Sallee & Yates' No. 1-B Ballard, Section 1-18-29, flowed 30 bbl. hourly for an estimated 700 bbl. daily through 1-in. choke, after a shot at 2,661-2,680 ft.

Shallow Rock Oil Co.'s No. 2 Hastle, Section 18-17-28, pumped 5 bbl. daily after a shot at 547-66 ft.

Eddy County

Carper Drlg. Co.'s No. 4 Robinson, SE SE SW Sec. 25-16-31. T.D. 4,025 ft.; rng. tbg. to test 4,025 ft.

G. R. Burke's No. 1 State, NE NE NW Sec. 36-16-24. Drlg. 1,500 ft.

B. H. Nolem's No. 1 Iles, SE SE SE Sec. 17-16-29. Tstg. 1,803-19 ft.; est. 35 B.O.P.D.

Allen, Fair & Pope's No. 4-A State, SE SW NW Sec. 36-17-29. T.D. 3,252 ft.; pay 3,200-11 ft.; installing pump.

Artesia Drlg. Co.'s No. 1 Hoffman, SE SE SE Sec. 14-17-24. S.D.R. 423 ft.

J. R. Cones et al's No. 1 Saunders, SE SE NW Sec. 13-17-27. S.O. 505 ft.; S.D.O. 600 ft.

Danciger O. & R. Co.'s No. 5-A Turner, C N½ NW NW Sec. 19-17-31. S.O.&G. 3,409-15 ft.; rng. tbg. to test 3,440-45 ft.

J. E. Hughes' No. 3 Brooks, NE NW NW Sec. 19-17-28. S.D.O. 2,222 ft.

Plains Prod.'s No. 1 Daugherty, SE SE SE Sec. 11-17-27. T.D. 428 ft.; S.D.O.

Republic Prod.'s No. 3-B Robison, SE SE SE Sec. 35-17-29. S.S.O. 3,165 ft.; shot with 40 qt.; est. 4 B.O. P.D.; prep C.O.; reshot 3,302 ft.

Brainard & Guy's No. 1 Guy, NW SW NW Sec. 10-18-29. T.D. 2,595 ft.; F. 50 B.O.P.D.; tstg. 2,595 ft.

Plains Prod. Co.'s No. 1 Massie, C SW SW Sec. 27-18-29. S.D.R. 2,085 ft.; S.O. 2,075-83 ft.

Barnev Cockburn's No. 1 Graham-State, C NE NE Sec. 16-18-31. Drk.

Continental et al's No. 1 Travis, SE SE SE Sec. 3-18-29. P.B. 2,670 ft.; pump 65 B.F. in 12 hours.; ⅛ oil, ⅞ b.s. and w.

L. E. Elliott's No. 1 Elliott, SE SE SE Sec. 24-18-29. Drlg. 3,507 ft.; S.S.O. 3,255-75 ft.

Franklin Pet. Corp.'s No. 1 Masteller, NW NW NE Sec. 7-18-30. Loc.

Farmer & Tallmadge's No. 1 Hubbell, NE SW Sec. 4-18-25. Plugged and abd. at 1,056 ft.

Franklin Pet. Corp.'s No. 1 Cappedge, NW SW NW Sec. 5-18-30. S.D.O. 3,092 ft.

E. S. McAuliff's No. 1 Coates, C SE NE Sec. 3-18-23. S.D. 1,079 ft.

Me-Tex et al's No. 1-B Ballard, C NW NW Sec. 8-18-29. T.D. 3,017 ft.; P.B. 2,635 ft.; est. 30 B.O.P.D. while C.O.; tstg.

Saunders Bros.' No. 1 Travis, Sec. 17-18-29. P. B. 2,578 ft.; comp.; 5 B.O.P.H. at 2,502-2,603 ft.

Saunders Bros.' No. 1 Murdock, NW NW SW Sec. 4-18-29. T.D. 2,625 ft.; F. est. 100 B.O.P.D.; flwd. 26 B.O. in 40 min. then went dead.

Fred Turner's No. 1 Nickson, C NE NE Sec. 30-18-26. S.D.O. 2,150 ft.

Underwood & Sanders' No. 2 Miller, SW NW NW Sec. 4-18-29. T.D. 2,405 ft.; milling csg. 1,800 ft.; jnkd. hole; skidded 50 ft. east; S.D.R. 1,660 ft.

Underwood & Sanders' No. 3 Miller, SE SW NW Sec. 4-18-29. P.B. 2,660 ft.; comp.; 90 B.O.P.D.; after shot.

J. W. Elliott's No. 1 Cannon (O.W.D.D.), C SW SE Sec. 4-19-30. S.D. 2,355 ft.

Trojan Oil Co.'s No. 1 Grant, SW SW NE Sec. 33-20s-25e. S.O. 1,530 ft.; S.D.R. 1,580 ft.

Chaves County

G. H. Cowden's No. 1 Brunson, 330 ft. N and W lines, Sec. 27-9s-30e. C.&P.

R. M. Baker's No. 1 Baker, NW NW NW Sec. 10-19-30. R.U. and S.D.

Caudill & French's No. 1-A Smith (O.W.D.D.), Sec. 1-4-29. Prep. to cmt. off csg. from 3,336-70 ft.; drlg. by csg. 3,687 ft.

E. J. Fisher's No. 1 Hill, CSL S½ Sec. 8-15-25. S.D.O. 850 ft.

Nay Hightower's No. 1 Billingslea, C SW NE Sec. 28-11-30. T.D. 3,445 ft.; P.B. 3,430 ft.; S.D.O.

Tarkenton Bros.' No. 1 Peters, SE SE NW Sec. 33-11-25. Drlg. 1,315 ft.; S.S.O. 1,280-85 ft.

Western Minerals, Inc.'s No. 1 Dow, C SW NW Sec. 27-10-30. S.O. 3,920-25 ft.; S.D.R. 4,090 ft.

Dona Ana County

Picacho O. & G. Co.'s No. 1 Armstrong, Sec. 15-23s-1w. S.D. 2,410 ft., T.D.; repairs.

Slack & Mahres' No. 1 Simmons, Sec. 35-22s-5e. S.D. 2,785 ft., T.D.; repairs.

Luna County

O. D. Berry's No. 1 Berry, SE SE SW Sec. 33-22s-10w. S.D.O. 1,000 ft.

Lea County

Coastal Development's No. 1 Caylor, NW NW SE Sec. 6-17-37. T.D. 5,005 ft.; reran 2-in. tbg. to 4,784 ft.; ran 1-in. tbg. inside of 2-in. to 3,339 ft., with 5 flow valves; flwd. 20 B.O. wtr. plus S.S.O. in 4 hrs. by gas-lift.; P.B. 4,785 ft.; tstg.

Frank Farley's No. 1-A State, Sec. 18-21s-30e. Drlg. 2,485 ft.

Maljamar O. & G. Co.'s No. 2 Mitchell, SW SE SW Sec. 5-17-32. T.D. 4,498 ft.; P.B. 3,882 ft.; S.I.; P.B. depth 4,003 ft.

Ohio Oil Co.'s No. 1 State-Staplin, C SE NW Sec. 19-17-35. Drlg. 4,640 ft.

Continental Oil Co.'s No. 8 Britt B-15, C W½ NW SE Sec. 15-20-37. Tstg. 3,882 ft.; 73 B.O. in 7 hrs. after acd.

Wilson Oil Co.'s No. 1 Shell-State, C NE SW Sec. 7-21-35. T.D. 3,736 ft.; flwd. 51 B.O.P.D.; tstg. 3,736 ft.

Peters & Elder's No. 3 Brunson, SW SW SW Sec. 3-22-37. Flwd. 42 B.O. in 7 hrs.; T.D. 3,742 ft.; tstg.

Lem Peters' No. 2 T. O. May, SW SW NE Sec. 34-22-37. S.I. 3,655 ft.; comp.; 124 bbl. in 12 hrs. at 3,570-3,655 ft.

Skelly Oil Co.'s No. 1 Sherrell, C SW SW Sec. 31-24-37. Drlg. 1,320 ft.

Anderson-Prichard Oil Corp.'s No. 9 Wells, C SW NE Sec. 6-25-37. P.B. 3,394 ft.; acid. with 1,000 gal.; 17 bbl. fluid, 40% wtr. on gas-lift.

Continental Oil Co.'s No. 1 State A-2, C SW SE Sec. 2-25-37. T.D. 3,500 ft.; P.B. 3,480 ft.; tstd. 1,140,000 cu. ft. gas; no oil; comp., 3,420,000 cu. ft. gas daily.

Hershback Drlg. Co.'s No. 1 Woolworth, NE NE SW Sec. 8-25-37. Abd. loc.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc.'s No. 2 North Albuquerque, NE SE NW Sec. 19-11n-4e. T.D. 4,550 ft.; C.O. to res.

Norins Realty Co., Inc.'s No. 2 Pajarita, Sec. 32-9n-1e. S.D. 1,800 ft.

San Juan County

Continental Oil Co.'s No. 97 Rattlesnake, C S½ SW Sec. 12-29n-19w. Drlg. 245 ft.; 8⅝-in. at 25 ft.; (first report).

Angel Peak Oil Co.'s No. 8 Govt., C NW SW Sec. 13-28n-11w. T.D. 1,420 ft.; R.U. new rig.

Continental Oil Co.'s No. 100 Rattlesnake, NE NW NE Sec. 2-29n-19w. T.D. 3,106 ft.; cmtd. off wtr. sd. at 2,712-70 ft.; W.O.C.

San Miguel County

Southwest Drlg., Inc.'s No. 1 Conchas, NW NE Sec. 34-17n-21e. Drlg. 2,225 ft.

Torrance County

Orville J. Lee's No. 1 Lee, NW NW SW Sec. 12-6n-7e, was completed at 1,950 ft. for 50,000 cu. ft. per day of carbon dioxide gas. This gas is used extensively in this area for manufacturing dry ice.

Drice Co.'s No. 1 Garland, NE SE NE Sec. 32-7n-7e. T.D. 2,016 ft.; drlg. by bit.

COLORADO

Adams County

Derby Dome O. & G. Co.'s No. 2 Baxter, C SE SW Sec. 2-3s-66w. S.D. 62 ft.

Boulder County

Continental Oil Co.'s No. 1 Borra, SE NE SW Sec. 5-1s-69w. Drlg. hd. gritty sh. 5,315 ft.

El Paso County

F. F. Hintze et al's No. 1 State, CEL SE SE Sec. 16-11s-66w. Rdy. to spd.

Fremont County

T. E. Maloney's No. 1, SE NW Sec. 34-19s-69w. Drlg. 1,725 ft.

Waterville Oil Co.'s No. 2 Persons, CWL NE NE Sec. 17-19s-69w. Drlg. 180 ft.

La Plata County

Nick Splatter's No. 1-X Bryce, C SW SW Sec. 32-33n-9w. T.D. 2,422 ft.; landed 6⅝-in. on bttm.

Larimer County

Continental Oil Co.'s No. 1 Meyer, SW SE SW Sec. 19-8n-68w. T.D. 5,206 ft.; P.B. to 4,686 ft.; shot with 20 qt. at 4,464-4,686 ft.

Las Animas County

J. H. Hulme et al's No. 1 Azar, SE SE NW Sec. 27-34s-58w. S.D. 1,868 ft.

Moffat County

Iron Springs Pet. Co.'s No. 1 Beckett, SE SE SE Sec. 9-9n-93w. M.I.M.

Cooperative O. & G. Co.'s No. 1 Gossard, CWL E½ E½ Sec. 29-5n-93w. Spd. and S.D. to comp. R.U.

Steamboat Springs Synd.'s No. 1 Sutton, NE NE SW Sec. 1-5n-96w. T.D. 1,840 ft.; S.S.O. in sd. at 1,825 ft.; U.R. 6⅝-in.

J. S. Warner's No. 1 Baker, NE NE SW Sec. 35-5n-96w. S.D. 300 ft.

Montezuma County

McElmo Oil Co.'s No. 1 West, NE NW NE Sec. 31-36n-17w. Drlg. 5,085 ft.

Park County

South Park Oil Co.'s No. 1 Lemar, NE NE SE Sec. 34-11s-75w. Drlg. 7,057 ft.

Rio Blanco County

Texas Co.-California Co.'s No. 3 Unit, NE NE NE Sec. 27-3n-94w. Bldg. road.

Routt County

L. C. Craig and L. C. Moore's No. 1-X Irwin, C SW NE Sec. 33-7n-85w. T.D. 1,625 ft.; W.O. 8¼-in.

WYOMING

Albany County

J. L. Gaylord-R. G. McConnell's No. 1 Fuller, NW NE NW Sec. 7-15n-75w. Drlg. 1,015 ft. in Dak.; good S.O. in Muddy sd.

Big Horn County

Frank S. Scott's No. 1 Robertson, SE SE SE Sec. 6-54n-93w. T.D. 645 ft.; rmg. 8-in. hole to 10 in.

Carbon County

Sinclair-Wyoming Oil Co.'s No. 12-B Wertz, SE NW NW Section 7-26n-89w, Wertz field, was completed at 6,086 ft. in the Tensleep for 3,607 bbl., flowing naturally, in 24 hours through the 2½-in. tubing set at 6,043 ft. It is an old well completed in April 1938, at 5,807 ft. for 900 bbl. per day, drilled deeper.

The Albert Development Syndicate's No. 1 Boeke, a shallow test of the Pennsylvanian and Mississippian series on the Albert dome, encountered a chalk-line formation at 247 ft., directly above a hard sandy limestone, which blew in for 3,000,000 cu. ft. of gas per day as shown by gage by representatives of the U. S. Geological Survey. Upon drilling deeper 3 ft. to 250 ft. the gas increased to 4,000,000 cu. ft. The gas is colorless, odorless, and will not burn. Samples have been sent back East for tests for helium content, if any. Drilling is proceeding and lower Tensleep is expected within the next 150 ft.

Martin & Gaylord's No. 1 Horne Bros., CNL NW SW Sec. 22-22n-78w. Drlg. 900 ft.; T. Wall Ck. 138 ft.

Ohio Oil Co.'s No. 1 University, SW SW SW Sec. 26-20n-78w. Drlg. 2,965 ft.

Albert Dev. Synd.'s No. 1 Boeke, SW NW Sec. 18-25n-79w. Drlg. below 250 ft.

Producers Oil Co.'s No. 1 Lake Valley, CNL Sec. 14-20n-88w. Drlg. sdy. sh. 3,380 ft.

Lincoln County

E. T. Williams Oil Co.-Robert Miller Taylor's No. 1 State, NE cor. Sec. 36-25n-115w. T.D. 1,937 ft.; will run 10-in.

H. C. Harris et al's No. 1 Govt., SE NW NW Sec. 23-21n-117w. Drlg. 2,105 ft.

Natrona County

Continental Oil Co.'s No. 1 McGrath, C NW SW Sec. 15-34n-78w. Drlg. 5,278 ft.; T. Wall Ck. form. 5,154 ft.

Connelly Drlg. Co.'s No. 1 State, SW SW NW Sec. 36-36n-81w. Drlg. below 1,300 ft.

Summit Oil Co.'s No. 2 Govt., NW NE NE Sec. 21-33n-80w. Drlg. 940 ft.

Niobrara County

Lance Creek had one near completion and one new operation. The Continental Oil Co.'s No. 7 Rodeo-4, in the northeastern part of the field where Sundance production is being developed, swabbed 162 bbl. in 24 hours while cleaning out from the Sundance sand at 4,260-85 ft. It is installing pumping equipment.

The Ohio Oil Co.'s No. 3 Cash-1, SW NW SW Section 4-35n-65w, reported a completion last week in the Leo sand, made 462 bbl. per day on official test.

Ohio Oil Co.'s No. 7 Leo O.P.C.-16, NE NE SW Sec. 35-36n-65w. R.U.R.; (first report).

H. D. Moore et al's No. 1 Berggren, SE NW Sec. 23-35n-63w. T.D. 2,242 ft.; T. Leo 2,228 ft.; rng. 7-in.

Minnelusa Oil Corp.-MacKinnie Oil & Drlg. Co.'s No. 1 Thompson, NE NW NE Sec. 7-35n-65w. T.D. 3,993 ft.; R.U.R. to D.D.; O.W.D.D.

Minnelusa Oil Corp.-MacKinnie Oil & Drlg. Co.'s No. 6 Thompson, NE NW SE Sec. 7-35n-65w. Cmtd. 13-in. at 317 ft.; W.O.C.

Continental Oil Co.'s No. 4 Apex-1, NW NE NE Sec. 34-36n-65w. Drlg. 2,290 ft.

Continental Oil Co.'s No. 5 Apex-3, SE NE SW Sec. 34-36n-65w. Drlg. 3,371 ft.

Argo Oil Co.'s No. 11-B Elliott, NE NE SW Sec. 5-35n-65w. Drlg. 3,615 ft.

Continental Oil Co.'s No. 4-B Diehlman, SW SW NW Sec. 8-35n-65w. Drlg. 3,652 ft.

Ohio Oil Co.'s No. 13 Lamb-Acct. 1, NW SE NE Sec. 5-35n-65w. Drlg. 4,312 ft.

Continental Oil Co.'s No. 7 Rodeo-4, SW SW NE Sec. 35-36n-65w. T.D. 4,285 ft.; cmtd. 7-in. 4,243 ft.; installing pmp.

C. L. Price's No. 2 Lamb, SE NW NW Sec. 7-35n-65w. Drlg. 4,280 ft.

Argo Oil Co.'s No. 10-A Elliott, SE NW SE Sec. 5-35n-65w. Drlg. 5,125 ft.

Argo Oil Co.'s No. 7 Ford, NW SE NW Sec. 33-36n-65w. Drlg. 5,380 ft. in sat. Leo sd.; 7-in. cmtd at 5,365 ft.

F. F. Hintze et al's No. 1 Wright-Govt., C NW SE Sec. 30-36n-63w. T.D. 4,964 ft.; cmtd. 7-in. at 4,617 ft. and S.D.

Fall River Prod. & Roy. Co.'s No. 1 Govt., CSL SE SE Sec. 35-40n-61w. Drlg. 2,390 ft.; S.G. 2,115-25 ft. and 2,255-60 ft.

A. B. Cobb's No. 4 Novick, SE SE SW Sec. 6-35n-65w T.D. 5,380 ft.; shot Joss sd. 150 qts.; C.O.

Park County

Mule Creek Oil Co.'s No. 1, Lot 51, Sec. 9-46n-101w. Loc.

Stanolind O. & G. Co.'s No. 2 Ohio, NW NW NE Sec. 3-47n-100w. T.D. 1,586 ft.; tstg.

Platte County

Glentop Explin. Co.'s No. 1, NE SE NE Sec. 18-30n-67w. Drlg. 563 ft. in White River form.

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Sublette County

One completion was reported in the La Barge field in Joe Minton and others' No. 1 Government, NE SE NE Section 28-27n-113w. It pumped 63 bbl. in 24 hours at 992 ft., total depth. It extends the proven area ¼ mile to the west and 440 ft. to the north. Location has been made for No. 2 Government, an outside well, a northwest offset to No. 1. The firm operates as the North La Barge Oil Co.

Joe Minton et al's No. 2 Govt., SW NE NE Sec. 28-27n-113w. M.I.M.; (first report).
Texas Co.'s No. 2-F, SE SW SW Sec. 27-27n-113w. Drlg. 617 ft.
Wyoming Pet. Corp.'s No. 2 Govt., SE cor. Sec. 3-29n-113w. Spdg.
California Co.'s No. 1 Unit 1, C SW NE Sec. 14-31n-109w. Drlg. 9,445 ft.
Wyoming Pet. Co.'s No. 1 Budd, C NE NE Sec. 10-29n-113w. S.D. 2,845 ft.; M.I. steam boilers and mud pmps. and prep. for winter oper.
Yellowstone Oil Co.'s No. 1 Budd, C SE SE Sec. 6-30n-112w. Drlg. L.&shils. 880 ft.; will run 10-in. for W.S.O.

Sweetwater County

Vermilion Oil Co.'s No. 1 Govt., SW SW SW Sec. 7-12n-99w. T.D. 1,200 ft.; C.O. at 805 ft.
Sinclair-Wyoming Oil Co.'s No. 87-A, SW SE SE Sec. 3-26n-90w. Cmtd. 10-in. at 56 ft.; (first report).
Sinclair-Wyoming Oil Co.'s No. 86-A, SE NE NE Sec. 10-26n-90w. T.D. 1,943 ft.; T. Sund. 1,941 ft.; 5½-in. cmtd. at 1,942 ft.; R.U.C.T.
Mountain Fuel Supply Co.'s No. 1 Mosey, NW NW NW Sec. 18-18n-104w. T.D. 2,610 ft.; cmtd. 8⅝-in. at 2,606 ft.; tstg.
Wyoming-Calif. Pet. Co.'s No. 2 Govt., CWL NW SW Sec. 24-17n-104w. Drlg. 2,600 ft.

Weston County

The Osage field had three completions and one new operation. Gerald Bock's No. 3, CEL NW NW Section 31-47n-63w, was dry at 290 ft. Charles Stough's No. 1, CSL NW SW Section 33-47n-63w, was dry at 455 ft. Kroker and others' No. 2, CNL NE NW Section 31-47n-63w, was dry at 495 ft.

Butcher Bros.' No. 4, CWL SW NE Sec. 16-43n-63w. R.O.G.; (first report).
Osage Trust's No. 1 Govt., NW NW SE Sec. 7-41n-60w. Drlg. below 1,200 ft.
Federal Oil Co.'s No. 10, CNL NE SE Sec. 15-46n-64w. Redrlg. below 1,000 ft.
Whedon et al's No. 1, SW NE Sec. 21-46n-64w. Drlg. sh. 4,025 ft.
Bruce C. Teeter's No. 1 State, SW SW SE Sec. 36-32n-61w. T.D. 1,760 ft.; T. Conv. 1,748 ft.; cmtd. 10-in. W.O.C.
Dornacher & Neiman's No. 1 Neiman, NW NW NW Sec. 6-47n-64w. Drlg. 300 ft.
Lem Johnston's No. 1, NW SW Sec. 23-44n-63w. T.D. 3,563 ft.; fsg.
F. P. Dilger et al's No. 4 Ost, CNL NE NE Sec. 25-46n-64w. Cg. in. Sund. below 2,300 ft.
Hunter & Satterlee's No. 1 Draper, NW NW NW Sec. 10-46n-63w. S.D. 160 ft. for repairs.

MONTANA

Carbon County

V. W. Kirk's No. 1 Robinson, SW SW NW Sec. 2-7s-21e. T.D. 5,828 ft.; wtr. at 5,811-22 ft.; cmtd. 7-in. at 5,520 ft. to test gas sd.
Miracle Oil Co.'s No. 2 Govt., CWL NE SE Sec. 3-6s-23e. T.D. 2,381 ft.; fsg. tools at 1,600 ft.

Glacier County

The only completion in the Cut Bank area was A. B. Cobb & Co.'s No. 1 Vasboe, CEL NW SW Section 27-37n-5w, a wildcat 1¼ miles southwest of the Yukon Oil Co.'s No. 1 Lungren, the nearest producer. It was a joint operation with the Texas Co. It was completed for 310,000 cu. ft. of gas in the Sunburst sand at 2,655-79 ft., after testing the Cut Bank sand at 2,700 ft. and plugging back. The Moulton sand was absent. The upper Cut Bank at 2,679-94 ft. had water and a show of gas, and the lower Cut Bank at 2,694-2,700 ft., had water with a show of oil. It did not go to the Ellis. Elevation is 3,815 ft.

The Huber-Montana Co.'s No. 3 Government, in North Cut Bank, an interesting test, is showing for a producer in the Sunburst sand at 2,662-2,702 ft. It showed 600 ft. of oil in 1 hour on a drill-stem test.

There were no new operations reported.

A. B. Cobb-T. T. Co.'s No. 1 Bilstad, C NW SE Sec. 4-36n-5w. Cmtd. 10¾-in. at 245 ft.; W.O.C.
Texas Co.'s No. 1 Ammerman, CWL SW SE Sec. 26-36n-6w. M.I.M.
Glacier Prod. Co.'s No. 1 Stott, C SE NW Sec. 34-33n-5w. Drlg. 700 ft.
Texas Co.'s No. 2 Bonnet, C SW SE Sec. 8-32n-5w. Spdg. 90 ft.
Glacier Prod. Co.'s No. 2 Barrington, C NW NE Sec. 19-33n-5w. Drlg. 1,300 ft.; Colo. 545 ft.; 10¾-in. 597 ft.
M. R. Wagner, Tr.'s No. 2 Tribal-173, NE SE SE Sec. 12-32n-6w. Set 10¾-in. at 425 ft.; W.O.C.
Huber-Montanta's No. 3 Govt., C NW NW Sec. 24-37n-5w. T.D. 2,702 ft.; cmtd. 7-in. at 2,662 ft.; W.O.C.
Texas Co.'s No. 8 Morrison, CEL NW NE Sec. 22-35n-6w. Drlg. 1,625 ft.
Glacier Prod. Co.'s No. 2 Hall, C NE SW Sec. 35-36n-6w. T.D. 2,900 ft.; 8⅝-in. cmtd. at 2,500 ft.; est. 1,000,000 ft. gas from 2,897-2,900 ft.

Pondera County

The only well completed in the Pondera field this year was the Pondera Oil Syndicate's No. 1 Haber, NE NW SE Section 17-27n-4w, which made 27 bbl. per day initially before acidizing. It had the top of the Madison at 2,025 ft. The location is on the same tract as the discovery well which has never been developed due to litigation which recently was ended.

Toole County

Kevin-Sunburst had three completions and one new operation. Art Crabtree's No. 1 Thompson, NE SE NW Section 35-35n-2w, was plugged and abandoned at 1,483 ft. after plugging back from 1,495 ft. and acidizing without results. G. & A. Oil Co.'s No. 13 Goeddertz (formerly No. 14), NE SE SW Section 23-35n-3w, is pumping 20 bbl. per day at 1,696 ft. from the contact at 1,687-96 ft. after acidizing with 500 gal. LeMac Oil Co.'s No. 1 Landowners, SW SE SW Section 3-34n-4w, was plugged and abandoned after encountering water in the contact at 2,079 ft.

S. T. Scotland's No. 3 McNamar, NW NE SW Sec. 29-35n-3w. Drlg. 815 ft.; (first report).
Big West Oil Co.'s No. 12 Dahlquist, CSL NW NE Sec. 21-35n-3w. T.D. 1,840 ft.; contact 1,816-40 ft.; 700 ft. O.I.H.; acd. with 500 gal.; tstg.
A. Beardslee's No. 10 Swears, C SW NW Sec. 9-35n-2w. Drlg. 825 ft.
Imperial-Craig's No. 1 Gauss, C SW NE Sec. 18-35n-1w. Drlg. 1,480 ft.
Montana-Dakota Utilities Co.'s No. 1 Krutsfield, C SE SW Sec. 1-33n-1w. T.D. 1,361 ft.; Sunb. 1,295-1,325 ft.; cmtd. 6⅝-in.
Frazer & Smith's No. 2 Van Note, NE SW NW Sec. 30-35n-2w. S.D. 940 ft.
Coolidge & Coolidge's No. 1 Maley, SW NE SE Sec. 31-36n-1w. S.D. 100 ft.
L. J. Yealy's No. 13 Shaw, NE SW SE Sec. 35-36n-2w. T.D. 1,764 ft.; Sunb. 1,522-36 ft.; contact 1,756-64 ft.; 2 to 3 B.O.P.D. in Sunburst; 1½ B.P.D. in contact; will acd.
Italo Pet. Corp.'s No. 1 Cornett, C SW NW Sec. 30-37n-3w. T.D. 2,305 ft.; ½ blr. O.P.H.; some gas; cmtd. caves; fsg.
Morton & Shaw's No. 1 Ellingson, NE NE NW Sec. 23-35n-3w. S.D. 400 ft.
Kippen O. & G. Co.'s (formerly Lewiston Synd.) No. 1 Solberg, SE SW NE Sec. 20-35n-3w. T.D. 1,680 ft.; cmtd. 6⅝-in. on bttm.
W. E. Rice Co.'s No. 4 Kearns, Lsease 8, C W½ E½ SE Sec. 18-35n-2w. T.D. 1,570 ft.; rng. 6⅝-in.
C. L. Smith, Agt.'s No. 1 Govt., SW SE NW Sec. 13-35n-2w. S.D. 1,345 ft.
R. G. Parrent's No. 1 Holbrook, C NW NE Sec. 2-36n-3w. S.D. 1,370 ft.
Superior Pet. Co.'s No. 8-A Govt., CEL NW NE Sec. 12-35n-3w. Drlg. 1,720 ft.

Yellowstone County

Riverton Oil Co.'s No. 1 Fox, CEL NW NE Sec. 14-2n-23e. T.D. 1,975 ft.; U.R. 8¼-in. from 1,900 ft. to bttm.

SOUTH DAKOTA

Harding County

South Dakota State Roy. Co.'s No. 1 State, SW NW Sec. 35-18n-1e. Drlg. r.b. 5,200 ft.

Oklahoma Fields

(Continued from Page 90)

tion 3-5-5, in the new area recently opened in southern Seminole County, topped dolomite at 2,980 ft., was bottomed at 3,102 ft., set 7-in. casing at 2,550 ft., and flowed 160 bbl. of oil in 24 hours.

Same operators' No. 1 Breco, NW NW NW Section 10-5-5, found Hunton lime at 2,515 ft., Sylvan shale 2,750 ft., total depth 2,752 ft., pumped 225 bbl. of oil the first 24 hours and 210 bbl. the next 24 hours, completed.

Barnsdall Oil Co.'s No. 8 Noble, NE SE SW Section 18-9-6, East Earlsboro area, found sand at 2,886 ft., but was dry and abandoned at 2,925 ft.

Magnolia Petroleum Co.'s No. 13 Anderson, SE NE SW Section 18-9-6, found Gilcrease sand at 3,684 ft., total depth 3,704 ft., and was dry and abandoned.

Barnsdall Oil Co.'s No. 1 Reed, SW SW NE Section 3-5-5, was a location. Culver & Burton's No. 1-C Swan, NW SW SE Section 3-5-5, set 12-in. pipe at 92 ft. and was waiting on cement.

Creek County

Martin's No. 3 Darko, NE SW NW Section 28-14-10, Creek County, topped Wilcox sand at 3,348 ft., total depth 3,377 ft., the hole filled with water and it was abandoned. Beal's No. 1 Morton, SW SW NE Section 34-14-10, had a hole full of water in Wilcox sand topped at 3,331 ft., total depth 3,341 ft., and was abandoned. E. H. Moore, Inc.'s No. 2 Mosquito, SW SW NE Section 20-17-9, found Bartlesville sand at 2,545-2,644 ft., total depth, plugged back to 1,090 ft., but was dry and abandoned. Midco Oil Corp.'s No. 1 Harvey, C SW NW Section 35-17-10, an old well deepened from 1,647 ft. to Wilcox sand at 2,856-2,905, total depth, was dry and abandoned.

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"CLEVELANDS" Save More — Because they Do More

New operations in Creek County: Dunn's No. 2 Anthis, SW NE SE Section 34-14-10, rig on ground; Riddle's No. 1 Mills, NW NW SW Section 15-15-9, cellar and pits; Helmerich & Payne, Inc.'s No. 1 Berry, C E½ NE NE Section 14-17-7, location; Green's No. 1 Willibey, SW SW SW Section 6-17-10, waiting on casing: Kessler Oil & Gas Co.'s No. 2 Cartwright, C NE NE Section 29-18-9, drilling below 540 ft.

Payne County

Texas Co.'s No. 2 Graham, C E½ SE SE Section 11-17-1e, Coyle pool, Payne County, found first Wilcox sand at 4,885-4,903 ft., total depth, and flowed 225 bbl. of oil in 24 hours, completed.

Same company's No. 1 Bolster, C W½ NW SE Section 12-17-1e, was rigging up rotary tools.

In Logan County Sinclair Prairie Oil Co.'s No. 4 Crews, Meridian pool, had Wilcox sand at 5,178-97 ft., was shot and flowed 75 bbl. of oil in 24 hours, but was not a completion.

In Noble County Sinclair Prairie Oil Co.'s No. 1 Frederick, C NE NE Section 33-20-2w, an old well, was plugged back from 5,140 ft. to 4,867 ft. and was to test Layton sand.

Pawnee County

Johnson Oil Refining Co.'s No. 10 Findley, CEL NW NW Section 27-20-9, Mannford district, Pawnee County, topped Red Fork sand at 2,037 ft., total depth 2,100 ft., plugged back to 2,072 ft., was shot and flowed 60 bbl. of oil in 24 hours.

New work in Pawnee County: Ross' No. 1 Sublet, NW SW NW Section 21-20-7, cellar; Central Commercial Oil Co.'s No. 1 Rigsby, SE NE SE Section 17-20-9, drilling below 300 ft.; Johnson Oil Refining Co.'s No. 12 Findley, SE NE NW Section 27-20-9, drilling below 600 ft.

Hughes-Okfuskee Counties

In the North Yeager area, Hughes County, Davon's No. 1 White, C N½ NW SE Section 5-8-10, was reported unofficially to have flowed 768 bbl. of oil and 250 bbl. of water in 24 hours, with 15,000,000 cu. ft. of gas. Gravity of the oil was said to be 43°. Lime was thought to have been topped at 3,691 ft., total depth 3,875 ft. Operators had not given out official information on this test, it was said.

Melton's No. 1 Jackson, C S½ NE NE Section 5-8-10, Hughes County, had spudded.

In Okfuskee County Pace's No. 1 Key, NE SE SW Section 11-11-8, had dug cellar and pits.

In Kay County Continental Oil Co.'s No. 1 Goodboy, C SE NW Section 18-25-2e, was a location; Burks' No. 2 Prunty, SW SE NW Section 33-28-3e, was rigging up machine.

Caddo County

Ohio Oil Co.'s No. 9 Pau-Kune, NE SE SW Section 3-5-9w, Cement field, Caddo County, found Rowe sand at 3,430-70 ft., total depth 3,490 ft., set 7-in. casing at 3,481 ft., perforated casing at 3,430-44 ft., and flowed 172 bbl. of 35-gravity oil in 6 hours, completed.

Ray Stephens, Inc.'s No. 2 Kidd, NW NE NE Section 27-6-10w, was completed as a 4-bbl. pumper in broken sand at 2,446-60 ft., total depth.

Peoples' No. 1 Wagner, SE NE SW Section 3-5-9w, was dry and abandoned at 3,506 ft., total depth.

First reports of new activity in Caddo County: Aladdin's No. 1 Trotter, SW NE SW Section 3-5-9w, moving in material; Carey's No. 1 Moore, SE NE SW Section 3-5-9w, pits; Johnson's No. 1 Rasberry, SW NE SW Section 3-5-9w, set 10-in. pipe at 314 ft.; waiting on cement; Palmer's No. 2 Ulery, SW NE NE Section 34-6-10w, cellar and pits.

Ray Stephens, Inc.'s No. 1 DeHeck, NW NW SE Section 21-6-10w, which extended the Cement field nearly 1 mile northwestward, was estimated good for 60 bbl. of oil daily and was being put on pump. It cored sand showing oil at 3,305-15 ft., and 6-in. casing was set at 3,300 ft.

Stephens County

Carl Carter's No. 4-B Spears, SW SE NW Section 15-1s-5w, Velma area, Stephens County, found sand at 642-54 ft. and 695-705 ft., total depth, and produced 5,000,000 cu. ft. of gas daily, completed.

Winkler's No. 1 Parker,- SE SW NE Section 16-1s-5w, found water in sand at 1,158-64 ft., total depth, and was abandoned.

Carl Carter's No. 14 Harley, NE NW NE Section 24-2s-4w, Milroy area, had sand at 438-62 ft., total depth, and pumped 10 bbl. of oil in 24 hours.

Tomlinson's No. 5 Montgomery, NW NW SE Section 11-2s-8w, Stephens County, was a rig.

In Grady County, T H McCasland's No. 5 Horton, SE SW SE Section 8-3n-5w, had dug cellar and pits. Magnolia Petroleum Co.'s No. 4 Harrison, SE NE NE Section 28-3n-5w, an old well bottomed at 1,900 ft., was building rig to deepen.

In Tillman County, Indian Territory illuminating Oil Co.'s No. 1 Zeller, SE SE SW Section 36-2s-19w, was a location.

In Jackson County, Burnham's No. 5 Sumner, SW NE SE Section 6-1s-19w, Tipton area, was moving in rotary tools.

West Texas Fields

(Continued from Page 80)

53 ft., 436 bbl. Ungren & Frazier's No. 6-A Dorsey, 2,039-46 ft., 74 bbl.

Shackelford County

Algord Oil Co.'s No. 3 Swenson, 3,178-87 ft., 557 bbl. B. & F. Bonded Cotton Warehouse's No. 1 Spell, 618-20 ft., 5 bbl. Black's No. 1 Diller, dry and abandoned at total depth of 551 ft. Butler & Horne and White & Duncan's No. 1 Lee, dry and abandoned at total depth of 826 ft. Dean Brothers' No. 1-D-114 Newell, 1,427-42 ft., 31 bbl. Owens-Snebold Oil Corp.'s No. 3 W. H. McKeever, 3,189-94 ft., 7,694 bbl. Roeser & Pendleton and Continental Oil Co.'s No. 3-A-89 Cook, dry and abandoned at total depth of 1,606 ft. Ungren & Frazier's No. 1 McKeever, 3,150-85 ft., 1,050 bbl. Valley Osage Oil Co.'s No. 2 McKeever, 3,188-98 ft., 1,880 bbl.

Palo Pinto County

Hickock Production Co. and Reynolds' No. 1 Gauldin, 2,400-25 ft., 12 bbl. Palo Pinto Oil & Gas Co.'s No. 27 Strawn, dry and abandoned at total depth of 3,342 ft.

WEST CENTRAL TEXAS COMPLETIONS

(24-hour gages)

Brown County

Hart & Sons No. 5-B Richmond, dry and abandoned at total depth of 1,360 ft.

Callahan County

Henderson No. 1 Jackson, dry and abandoned at total depth of 875 ft.

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Jones County

Danciger Oil & Refining Co.'s No. 2 Guitar, 2,143-48 ft., 27 bbl. (old well drilled deeper). Brown Eagle Oil Co. No. 2 Guitar, 2,141-42½ ft., 237 bbl. Guitar Trust Estate No. 10 fee, 2,141-48 ft., 162 bbl. W. H. Peckham's No. 7 Brock, 1,889-1,907 ft., 398 bbl.

Shackelford County

Danciger Oil & Refining Co.'s No. 6 McCowan, 3,186-96 ft., 2,772 bbl. Fain-McGaha Oil Corp.'s No. 1 Dawson-Conway, 1,491-96 ft., 37 bbl. Hammond's No. 3 McKeener, 3,211-14 ft., 790 bbl. Owens-Snebold Oil Corp.'s No. 5 Haterius, 3,160-83 ft., 1,500 bbl. Owens-Snebold Oil Corp.'s No. 5 J. S. McKeever, 3,194-98 ft., 1,200 bbl.

Stephens Coun y

Whittmer Oil & Gas Properties' No. 1 Loving, 3,496-3,512 ft., 200 bbl., to open a new pool for the county.

WEST TEXAS FIELD COMPLETIONS

(24-hour gages)

Ector County

In the Foster pool, Arkansas Fuel No. 2-C Johnson, 4,111-4,205 ft., 611 bbl. Stanolind Oil & Gas Co.'s No. 30-A Cowden, 4,015-4,190 ft., 617 bbl. Stanolind Oil & Gas Co.'s No. 21-B Cowden, 4,005-4,170 ft., 1,072 bbl. York & Harper's No. 6-B Foster, 4,196-4,287 ft., 638 bbl. In the North Cowden pool Standard Oil Co. of Texas' No. 2 Cochran, 4,020-4,120 ft., 745 bbl. Stanolind Oil & Gas Co.'s No. 23-A Cowden, 4,020-4,164 ft., 974 bbl. Stanolind Oil & Gas Co.'s No. 17 Roberts, 4,167-4,415 ft., 580 bbl. Stanolind Oil & Gas Co.'s No. 20 Witcher, 3,980-4,200 ft., 710 bbl. In the Goldsmith pool, Gulf Oil Corp.'s No. 120 Goldsmith, 4,155-4,210 ft., 1,056 bbl.

Andrews County

In the Fuhrman pool, Gulf Oil Corp.'s No. 5 Ford, 4,300-4,460 ft., 237 bbl.

Gaines County

In the Wasson-Bennett pool, M.B.K. Drilling Co.'s No. 2-B Wasson, 4,900-5,002 ft., 232 bbl. In the Seminole pool, Ohio Oil Co.'s No. 1 W. G. Gibbs, 5,080-5,268 ft., 973 bbl. Osage Drilling Co.'s No. 1-A J. L. Tippett, 5,078-5,289 ft., 1,023 bbl.

Hockley County

In the Slaughter pool, Western States Gasoline Corp.'s No. 1 G. Frazier, 4,915-5,004 ft., 1,360 bbl.

Pecos County

In the Taylor-Link pool Adams, Black & Bennett's No. 2 Iowa Realty Co., 1,556-1,623 ft., 173 bbl. David Breeding's No. 3 University-Humble, 1,560-1,688 ft., 447 bbl. In the While & Baker area, Cardinal Oil Co.'s No. 4-B-45 White-Baker, 1,657-92 ft., 100 bbl. In the Payton pool, Kugle & Sunset's No. 3 Jackson, 2,055-79 ft., 35 bbl. In the Tobarg pool Marvin-Henderson Oil Co.'s No. 7 Tippett-Stanolind, 402-25 ft., 12 bbl. In the Shearer pool Sahara Oil Co.'s No. 7 Shearer-Atlantic, 1,493-1,506 ft., 210 bbl.

Reeves County

A wildcat, Forest Development Co.'s No. 1 I. E. Scott, dry and abandoned at total depth of 5,336 ft. Topped the Delaware lime at 4,810 ft. and topped the Delaware sand at 4,883 ft.

Scurry County

In the Sharon pool Magnolia Petroleum Co.'s No. 1 R. O. McClure, 2,391-2,525 ft., 113 bbl.

Upton County

In the McCamey pool Continental Oil Co.'s No. 7 Burleson, 2,097-2,185 ft., 45 bbl. (old well drilled deeper). Gulf Oil Corp.'s No. 5-B Hughes, 2,120-2,252 ft., 8½ bbl. Texas Pacific Coal & Oil Co.'s No. 39-A Lane, 2,092-95 ft., 302 bbl.

Ward County

Eastland Oil Co.'s No. 4-A Martin Weiss, 2,360-7? ft., 348 bbl.

Winkler County

In the Hendrick pool Bates-Reading Oil Co.'s No. 1-C E. W. Cowden, 2,840-2,993 ft., 329 bbl Stanolind Oil & Gas Co.-Westbrook's No. T-89-F-4 Hendrick, 2,850-3,000 ft., 24 bbl. Texon Oil & Land Co.'s No. 6-27 Cowden, 2,824-2,967 ft., 522 bbl.

Yoakum County

In the Wasson-Bennett pool Fred M. Allison's No. 1 D. T. Bush, dry and abandoned at total depth of 5,462 ft., topped anhydrite 2,570 ft., topped the brown lime 4,390 ft., topped solid lime 4,865 ft. Aloco Oil Co.'s No. 2 Mary Jordan, 4,905-5,200 ft., 552 bbl. Argo Oil Co.'s No. 1-A J. H. Comer estate, 5,000-5,217 ft., 1,574 bbl. Humble Oil & Refining Co.'s No. 17 Wooten, 4,915-5,145 ft., 474 bbl. Humble Oil & Refining Co.'s No. 18 Wooten, 4,830-5,134 ft., 1,007 bbl. Magnolia Petroleum Co.'s No. 2-867 Kendrick, 4,945-5,120 ft., 1,550 bbl. Magnolia Petroleum Co. No. 1 H. O. Mahoney, 5,107-5,220 ft., 780 bbl. J. W. Murchinson and others' No. 10-B Elliott, 4,940-5,099 ft., 968 bbl. J. W. Murchinson and others' No. 11-B Elliott, 4,938-5,092 ft., 814 bbl. Oil Development Co.'s No. 1-801 fee, 4,930-5,204 ft., 628 bbl. Oil Development Co.'s No. 6-803 fee, 4,900-5,230 ft., 1,320 bbl. Oil Development Co.'s No. 7-803 fee, 4,907-5,214 ft., 650 bbl. Texas Pacific Coal & Oil Co.'s No. 3-A C. W. Cecil, 4,830-5,100 ft., 944 bbl. Shell Oil Co., Inc.'s No. 8 C Baumgart, 4,860-5,200 ft., 1,165 bbl.

PANHANDLE COMPLETIONS

(24-hour gages)

Carson County

Magnolia Petroleum Co.'s No. 61 fee No. 244, 2,972-3,012 ft., 383 bbl. Skelly Oil Co.'s No. 99 Schafer ranch, 3,135-98 ft., 352 bbl.

Gray County

S. C. Evans' No. 5 J. T. Benton, 3,183-3,293 ft., 481 bbl. Hagy, Harrington & Marsh's No. 1 M. C. Vaniman, 2,585-2,690 ft., 19,300,000 cu. ft. of gas. Lone Star Gas Co.'s No. 1 I. D. Shaw, dry and abandoned at 2,732 ft. Nabob Oil Co.'s No. 3 J. S. Morse B, 2,631-2,780 ft., 499 bbl. Shell Oil Co., Inc.'s No. 14 Haggard, 3,200-3,284 ft., 928 bbl.

Hutchinson County

Continental Oil Co.'s No. 3 E. Smith, 3,013-3,186 ft., 6,300,000 cu. ft. of gas. C. C. Keech's No. 2 T. J. Thompson, 2,920-93 ft., 475 bbl. J. R. Phillips Employes' No. 2 T. J. Thompson, 3,000-58 ft., 234 bbl.

Moore County

Texoma Natural Gas Co.'s No. 8-TH Terry Thompson, 2,760-3,346 ft., 22,203,000 cu. ft. of gas.

Wheeler County

Magnolia Petroleum Co.'s No. 4 J. A. Worley, 2,350-2,419 ft., 260 bbl.

La.-Ark. Fields

(Continued from Page 81)

dustries. Section 26-22-3, 1,000,000 cu. ft. of gas, rock pressure 1,000 lb., total depth 2,208 ft.

ARKANSAS COMPLETIONS

Magnolia—Columbia County

Shell Oil Co., Inc.'s No. 1 W. F. Merritt, C NE SW Section 15-17-20, 408 bbl. through 9/64-in. choke, tubing pressure 1,175 lb., casing pressure 1,275 lb., total depth 7,675 ft.

Wildcat—Lonoke County

Cabot Drilling Club, Inc.'s No. 1 Benson townsite, Section 18-4n-9w, dry and abandoned at a total depth of 2,760 ft. in hard black shale.

Wildcat—Ouachita County

Lion Oil Refining Co.'s No. 1 Annie, C SE SE Section 29-15-17, dry and abandoned at a total depth of 6,093 ft.

MISSISSIPPI

Increasing interest in Mississippi was reflected by reports of new drilling activity slated to get underway in several counties adjoining Yazoo County, where last month, Union Producing Co. provided the state with its first oil producer by the completion of No. 1 Woodruff, the discovery well of the Tinsley field, 10 miles southwest of Yazoo City.

Major companies and independents have been slow in starting any operations, but with the movement by tank car of approximately 8,000 bbl. of crude oil from the discovery well to Standard Oil Co. of Louisiana refinery at Baton Rouge, definitely established the new strike as one of considerable importance, and an increase in geophysical, leasing and drilling activity is predicted.

In the Tinsley field, drilling was started by Union Producing Co. on two wells, north and south of the discovery well, while Jones and O'Brien are preparing to spud No. 1 Jennie Stevens, an outpost well in Section 13-10n-3w. East of the field, approximately 3 miles, Eureka Petroleum Co. is reported to have made tentative location on the Frank Brooks lease in Section 17-10n-2w. The company is said to have approximately 3,000 acres in the area, and drilling is scheduled to start within 10 days.

In the adjoining counties of Hinds and Warren, several large blocks have been leased. Near the town of Bolton, W. E. Stewart is reported to have taken a large block centering in Townships 2w and 3w, while 10 miles north of Vicksburg, Warren County, Magnolia Petroleum Co. is reported to have leased a block centering around 15-17n-4e. In Hinds County, drilling was scheduled to be started on G. Jeffrey's No. 1 Gaddis-McLaurn, located near the town of Bolton in Section 17-7n-2w.

In the southwestern part of the state and in Wilkinson County, Louisiana Crusader Oil Corp. is scheduled to begin drilling operations on two large blocks, recently selected following considerable geophysical work. On the Mississippi Sound, Phillips Petroleum Co. has completed its geophysical survey, and if the results are favorable drilling is scheduled to be started at an early date.

Headquarters by major and independent companies are being established at Jackson, approximately 30 miles south of the Tinsley field. Magnolia Petroleum Co. has moved its entire New Orleans office force to Jackson, and Lion Oil Refining Co. has opened a geological office in the Tower Building.

Production by Pool

Estimated daily gross production all companies week ending October 7:

NORTH LOUISIANA

	Barrels
Bellevue	470
Caddo light	4,585
Caddo heavy	2,520
Converse	535
Cotton Valley light	*9,820
Cross Lake	4,240
De Soto and Red River	1,120
Elm Grove	340
Haynesville	2,780
Holly	90
Homer	2,780
Lisbon	5,470
Pleasant Hill	110
Rodessa	24,120
Sarepta-Carterville	†275
Sligo	1,250
Sugar Creek	260
Urania	2,570
Zwolle	2,640
Total	65,974

SOUTH ARKANSAS

Atlanta	350
Buckner	2,330
Champagnolle	1,390
Dorcheat	160
El Dorado	1,650
Lewisville	1,175
Lisbon	245
Magnolia	16,525
Miller County	230
Nevada	575
Rodessa	2,915
Schuler	18,100
Smackover	1,900
Smackover heavy	14,600
Stephens	535
Troy	1,280
Urbana	1,035
Village	1,020
Total	66,015

Texas side of Rodessa field 27,290 bbl.

*2,450 bbl. is distillate.
†55 bbl. is distillate.

Kentucky Fields

(Continued from Page 78)

A. D. Schaffer and others' No. 1 Dr. C. L. Medley, spudding.

Henderson County, Spottsville district, Magnolia Petroleum Co.'s No. 5 Anna Green, rigging up rotary. Baskett district, Paul Luhring and others' No. 1 Mrs. Laura Lacke, dry hole at 1,322 ft. Corydon district, Sun Oil Co. and others' No. 2 George F. Trigg, drilling at 2,065 ft.

Ohio County, Dundee district, Dundee Valley Gas & Oil Corp.'s No. 7 A. P. Boswell, drilling at 125 ft. Fordsville district, Charles Brown's No. 3 Bettie Cullen, dry hole at 410 ft. Buford district, Frank Randall and others' No. 4 A. T. French, drilling at 500 ft.

Todd County, 4 miles northwest of Daysville, A. A. Peard and others' No. 1 Estus, moving in.

Union County, on Slim Island in Ohio River, 1½ miles downstream from Mount Vernon, Ill., Yandell Rogers' No. 1 Harris and others, derrick up.

Southwest Texas District

Distillate Pool Prospect in Duval; Goliad-Dry Gas Area

By F. L. SINGLETON

CORPUS CHRISTI, Tex., Oct. 9.—A prospective condensate pool in Duval County, a new dry-gas field in Goliad County, the testing of several promising wildcats and the discovery of deeper production in the Ben Bolt field, Jim Wells County, featured developments in the Southwest Texas district the past week.

Standard Oil Co. of Texas' No. 1 Jack Casey, Sejita prospect, eastern Duval County, may have opened a field for the Cockfield trend when it showed distillate production on a drill-stem test. The well is not officially completed, but is testing a series of sands in hope that one of them may yield crude oil. The well was drilled to 6,747 ft. but was plugged back to 6,580 ft. and 7-in. casing cemented at 6,722 ft. after an electrical survey and side-wall cores showed three sands at 6,089-6,603 ft. Side-wall cores showed shaly sand with a gas odor at 6,089 ft., 6,109 ft., 6,125 ft., 6,419 ft., and 6,441 ft., gas sand at 6,581 ft. and sand with an oil odor at 6,592-6,603 ft.

The casing was perforated at 6,595-6,610 ft., and on a 10-minute drill-stem test 700 ft. of mud, cut with gas and distillate, was recovered. The perforations were squeezed off and the well is testing through perforated casing at 6,080-6,180 ft. At the close of the week working pressure had built up to 2,250 lb.

In southern Goliad County Shell Oil Co., Inc., opened the Fannin gas field with the completion of No. 1 G. J. Swickheimer which flowed 430,700 cu. ft. of dry gas daily through a $\frac{8}{16}$-in. choke under a tubing pressure of 1,225 lb. and casing pressure 1,240 lb. The well was drilled to 3,512 ft. but production is from a gas sand at 2,840-64 ft.

Trinity Drillers, Inc., and others' No. 1 T. C. Edwards, midway between the Coletto Creek and McFaddin fields, Victoria County, perforated casing at 5,978-85 ft., and on a 42-minute drill-stem test flowed salt water under a working pressure of 30 lb. An electrical survey is reported to have indicated several possible sands above 5,900 ft., and these are expected to be tested during the week.

The newly opened Cologne field, 5 miles northeast of the above-mentioned well, was apparently extended 1,300 ft. east as Houston Oil Co.'s No. 1 Emma Martin tested 350 lb. working pressure on a drill-stem test at 2,152-58 ft. This field was opened the previous week with the completion of the company's No. 1 Hoenstein, a dry-gas well at 2,860-70 ft.

Production tests on two wildcats in Nueces County were attracting attention. Approximately 1 mile southeast of the town of Agua Dulce, Premont Petroleum Co.'s No. 1 Langham is bottomed at 7,161 ft. and 7-in. casing was cemented at 5,681 ft. to test a series of gas and distillate sands logged by an electrical survey. Four miles south of Robstown, Mills Bennett Production Co. and others' No. 1 Fred Talley, Section 10, George H. Pauls subdivision, abandoned as a dry hole in May at at total depth of 7,053 ft., has been taken over by L. A. Winship and M. P. Dunn and casing is being cemented to test sands logged by an electrical survey at 3,675 ft., 3,790 ft., and 3,835 ft.

In Corpus Christi Bay, adjoining the southern part of the East White Point field, San Patricio County, Sinclair Prairie Oil Co. is completing its second oil well. Sand showing oil and gas was cored at 5,631-38 ft., and the well is flowing into the tanks from perforated casing at 5,628-35 ft.

In the Odem area, San Patricio County, the testing of Seaboard Oil Corp.'s No. 1 M. C. Smith continues to hold interest in spite of the fact that three production tests made during the week were disappointing. The first test at 7,058-60 ft. showed salt water with a slight show of oil. The casing was then perforated at 6,995-7,000 ft., and 90 ft. of gas and distillate-cut mud was recovered. Working pressure built up to 600 lb. in 5 minutes. Another test at 5,915-25 ft. recovered salt water and the company has squeezed off all perforations and is preparing to test other sand sections higher up the hole. The county gained a new wildcat operation as Diamond Half Oil Corp. spudded No. 1 W. F. Timon, 4 miles southeast of Mathis in the San Patricio de Hibernia Survey, a projected 6,000-ft. test.

A south extension and a new producing horizon in the Ben Bolt field, Jim Wells County was opened as H. J. Mosser prepared to complete No. 2 Perales after the well flowed pipe-line oil. About 1,800 ft. of oil was recovered on a drill-stem test at 5,393-5,417 ft. The sand section was logged at 5,387-5,406 ft., approximately 150 ft. lower than the regular pay.

La Gloria field, Jim Wells County, which is now receiving an extensive drilling campaign by Magnolia Petroleum Co. was assured an important north extension as No. 1 Stolze, cored gas and distillate sand at 5,612-24 ft. and 5,806-10 ft. The well is coring ahead for the 7,200-ft. zone, from which crude-oil production was recently developed with the completion of No. 1 Maun, 1 mile east of the discovery well, a distillate producer.

In the Rincon field two wells were nearing the sand. W. R. Davis' No. 1 Slick, cored oil sand at 3,952-59 ft., and on a 15-minute drill-stem test recovered 105 ft. of oil-cut drilling mud and 2½ lb. working pressure. The same company's No. 2 Slick is coring in shale below 3,718 ft. after two drill-stem tests at 3,667-80 ft. and 3,676-3,718 ft. showed mud and salt water.

Atlantic Refining Co.'s No. 1 American Rio Grande, the discovery well of the Weslaco field, Hidalgo County, is being retested. This well was completed in February 1938 as a distillate producer at 8,634-42 ft. The latest test was made at 8,618-32 ft. and on a 30-hour drill-stem test the well flowed 7,500,000 cu. ft. of gas and 56 bbl. of 53.5-gravity distillate through a ⅜-in. choke. There was no showing of salt water. It is reported that a recycling plant will be constructed in the field within the near future which will result in additional wells being drilled on the structure.

COMPLETIONS IN PROVEN FIELDS

Aransas-San Patricio Counties

McCampbell field: Atlantic Refining Co.'s No. 1 Kearney, perforated casing 6,864-69 ft., 29 bbl., ¼-in. choke. Bay-Tex Oil Corp.'s No. 4 Conn-Brown, perforated casing 7,124-44 ft., 120 bbl., $\frac{7}{16}$-in. choke. Corgey & Grote's No. 1 Porterfield, 7,150 ft., 86 bbl., 9/64-in. choke. M. G. Hansbro's No. 1 Scrivner, perforated casing 7,136-37 ft., 113 bbl., 9/64-in. choke.

Duval County

Eagle Hill field: Humble Oil & Refining Co.'s No. 8-E Duval County Ranch Co., 1,454 ft., gas well. Fitzsimmons field: Circle Oil Co.'s No. 2 Mew, perforated casing 4,248-54 ft., 65 bbl., 9/64-in. choke. Hoffman field: Cox & Hamon's No. 13 Hoffman, perforated casing 2,877-80 ft., 61 bbl., jetting. Lundell field: Government Wells Oil Co.'s No. 33 Lundell, 1,547 ft., 3 bbl., jetting. Piedra De Lumbre field: Magnolia Petroleum Co.'s No. 38 Duval County Ranch Co., sand 1,518-25 ft., 60 bbl., jetting. S. R. C. field: Texas Co.'s No. 28 Duval County Ranch Co., sand 1,030-39 ft., 64 bbl., pumping.

Jim Hogg-Brooks Counties

Kelsey field: Humble Oil & Refining Co.'s No 24 McGill, 4,739 ft., 98 bbl., ¼-in. choke. Humble Oil & Refining Co.'s No. 26 McGill, 4,736 ft., 82 bbl., ⅛-in. choke.

Nueces County

Agua Dulce field: Union Producing Co.'s No. 1 Pyle, perforated casing 4,740-56 ft., gas well. Union Producing Co.'s No. 5 Talbert, perforated casing 4,657-70 ft., gas well. Union Producing Co.'s No. 1 Wallace, perforated casing 6,615-22 ft., gas well. Clara Driscoll field: Magnolia Petroleum Co.'s No. 1 Johnson, 3,400 ft., well blew out, abandoned. Luby field: Stanolind Oil & Gas Co.'s No. 27 Spessard, perforated casing 5,048-52 ft., 119 bbl., ⅛-in. choke. Minnie Bock field: Earl Fain, Jr., No. 1-B Minnie Bock, perforated casing 3,818-21 ft., 102 bbl., 11/64-in. choke. Riverside field: Renwar Oil Corp.'s No. 1 Wright, 5,029 ft., dry and abandoned. Saxet field: Southern Minerals Corp.'s No. 10 Isensee, sand 4,732-38 ft., 159 bbl., $\frac{7}{16}$-in. choke. Everett Walling's No. 1 Isensee, perforated casing 5,765-70 ft., 87 bbl., ⅛-in. choke. Western Gulf Petroleum Co.'s No. 9 Isensee, perforated casing 5,791-95 ft., 100 bbl., ⅛-in. choke. South Clara Driscoll field: Wellington Oil Co.'s No. 12 Dugger, 5,410 ft., 97 bbl., $\frac{7}{16}$-in. choke.

Jim Wells County

Reynolds field: Tom Graham's No. 5-A Mosser, perforated casing 5,144-48 ft., 106 bbl., ⅛-in. choke.

Refugio County

Tomoconnor field: Quintana Petroleum Corp.'s No. 17-A Williams, perforated casing 5,736-44 ft., 5,836-46 ft., 715 bbl., ¼-in. choke.

San Patricio County

East White Point field: Allen & Morris' No. 2 Baldwin, perforated casing 5,609-19 ft., 180 bbl., ¼-in. choke. Houston Oil Co.'s No. 2 fee, perforated casing 5,640-48 ft., 232 bbl., 5/32-in. choke. Humble Oil & Refining Co.'s No. 5 Countiss, 5,633 ft., 177 bbl., ⅛-in. choke. Plymouth Oil Co.'s No. 1 Hutton, 5,669 ft., 152 bbl., 7/64-in. choke. Texas Co.'s No. 1 H. A. Speer, 5,680 ft., 120 bbl., ⅛-in. choke. Plymouth field: Easter-Wood Production Co.'s No. 1 Cryder, perforated casing 5,635-40 ft., 136 bbl., ⅛-in. choke.

Webb County

Volpe field: Magnolia Petroleum Co.'s No. 9 Volpe-Benavides, sand 2,466-75 ft., 65 bbl., pumping.

East Texas Fields

(Continued from Page 84)

the Paluxy formation. Contract depth was originally 6,500 ft.

EAST TEXAS FIELD COMPLETIONS

(One-hour gages)

Gregg County—Kilgore Area

Roosth-Genecov's No. 3 Laird, 3,549-60 ft., 15 bbl.

Rusk County—Joiner Area

Hunt's No. 26 Young, 3,675-3,720 ft., 50 bbl. Magnolia Petroleum Co.'s No. 7 Mayfield-Alford, 3,626-61 ft., 10 bbl.

EAST CENTRAL TEXAS COMPLETIONS

(24-hour gages)

Grayson County

J. M. Jones' No. 1 Golling, I. Southward Survey, 10 miles northwest of Denison, dry and abandoned at total depth of 601 ft.

Houston County

In the Navarro Crossing field, Humble Oil & Refining Co.'s No. 1 A. Pouncey, J. G. Thompson Survey, topped sand at 5,884½ ft., and 5½-in. casing landed at 5,889 ft., perforated casing from 5,887-87¾ ft. and well flowed 127 bbl. of oil in 24 hours through ¼-in. choke under tubing pressure of 2,100 lb. and casing pressure of 2,250 lb. with a gas-oil ratio of 12,280 to 1.

Texas and Louisiana Gulf

By
NEIL WILLIAMS

2,600-Bbl. Well in Golden Meadows Increases Drilling

HOUSTON, Tex., Oct. 9. — Another outpost in the newly opened Anchor field, Brazoria County, was started when Humble Oil & Refining Co. began rigging up No. 1 M. W. Mettler, 1½ miles northeast of the discovery well. The new well is 660 ft. from the north line and 4,550 ft. from the east line of the J. de Jesus Valderas Survey.

The Anchor field was opened the previous week by Glenn McCarthy's No. 1 Carr, a distillate well in the basal Frio formation at 10,460-67 ft. In a 12-hour gage ending at 7 a.m., October 3, the well flowed 85 bbl. of 52-gravity distillate through ¼-in. choke. The rig was moved approximately 2,200 ft. for the same operator's No. 1 Salmon and Momma in the George Robinson Survey.

In the same county, several miles due east of Anchor, Glenn H. McCarthy staked location for No. 1 E. W. Andrau, about 9,800 ft. due north of the discovery well of the Chocolate Bayou field. The well is 467 ft. from the southeast line and 1,767 ft. from the northeast line of H.T.&B. Survey No. 5. Drilling was started on McCarthy's No. 2 Houston Farm Development Co., 3,000 ft. northwest of the discovery well, No. 1 Houston Farm Development Co., which is being reworked in an attempt to increase production. This well was completed at approximately 9,800-9,900 ft., and has been flowing from 32 to 50 bbl. of distillate daily through various chokes.

Phillips Petroleum Co.'s No. 1 Duggan, north side of the League City field, Galveston County, opened production from a deeper sand when it flowed 110 bbl. of oil plus 42 bbl. of salt water, through a ⅛-in. choke under a tubing pressure of 1,500 lb. and casing pressure 1,050 lb. The hole is bottomed at 10,187 ft., and the well is producing through casing perforated at 9,940-43 ft.

On the west side of the Lovells Lake field, Jefferson County, Stanolind Oil & Gas Co.'s No. 1-A Carr is bottomed at 7,806 ft., and is being tested through perforated casing at 7,789-94 ft. Rowan Drilling Co.'s No. 1 Bordages, William Carr Survey, topped the first sand showing oil and gas at 7,693-7,729 ft., and the second sand at 7,785-7,810 ft., total depth. Five-and-one-half-inch casing was cemented on bottom and the well is now being tested. All production developed thus far has been by Humble Oil & Refining Co., Shell Oil Co., Inc., and Glenn H. McCarthy.

In Chambers County, on the east side of the South Cotton Lake field, Salt Dome Oil Corp.'s No. 3-A Lawrence is bottomed at 6,530 ft., and 5½-in. casing was cemented at 6,512 ft. Sandy shale showing oil and gas was logged at 6,469-84 ft., and 6,508-19 ft. Location for another well was staked in the West Cotton Lake area by J. R. Turnbull for No. 1 Kirby Petroleum Co. The well is about 1,000 ft. north of No. 1 W. C. Shepherd, which is showing for a small producer at 6,457-65 ft. This area, northwest of the main production in the Cotton Lake field, received considerable attention several months ago by the completion of F. A. Gillespie and others' No. 1 Kirby Lumber Co. The well flowed for a short time, but went dead and has never been revived.

Stanolind Oil & Gas Co. is starting another operation in the Martha field, Liberty County, as material is being moved in for No. 1 R. G. Palmer, in the I.&G.N. Survey No. 7, approximately 1,500 ft. southwest of No. 1 Seaberg.

In the Francitas field, Jackson County, Skelly Oil Co.'s No. 1 Kunover, an outpost 1,280 ft. southwest of Crosby Drilling Co.'s No. 1 Kopnicky, cored sand with a gas and distillate odor at 7,065-99 ft., and salt water sand at 7,216-27 ft.

In the Garwood field, Colorado Survey, Davis & Co.'s No. 1 McLane, I.&G.N. Survey No. 41, topped the Weches formation at 7,800 ft. and is coring in shale below 8,763 ft. This well is being drilled in search of Tertiary Wilcox production and the outcome should be determined this week. Stake Petroleum Co.'s No. 1 Ned Burford, a wildcat near Columbus, was dry and abandoned in the Wilcox formation at 7,582 ft.

West of the Raccoon Bend field, Austin County, D. M. Hill made a location for No. 1 Max Bader. The well is 336 ft. from the west line and 2,376 ft. from the north line of a 615.3-acre tract in the William Smeathers League. It is scheduled to be drilled to 8,000 ft.

Louisiana Coast

In the Louisiana Gulf Coast district attention was centered on La Place prospect, St. John the Baptist Parish, where Pan American Production Co.'s No. 1 Mills was making a drill-stem test following an electrical survey which showed favorable indications in a sand section at 8,880-96 ft., total depth. This well is looked upon as a probable pool opener as several sand sections showing gas and distillate have been logged at intervals from 8,212 ft. to the total depth. The first sand section was logged at 8,212-30 ft., and the second at 8,340-88 ft. Both were reported to be showing gas. At a total depth of 8,392 ft. an electrical survey was made and showed 30 ohms on normal curve, 30 ohms on third curve and 20 ohms on fourth curve in a sand section at 8,342-62 ft. Shaly sand at 8,367-77 ft. showed 15 ohms on normal curve, 6 ohms on third curve and 15 ohms on fourth curve. Water sand was recorded at 8,384-92 ft. The hole was cored ahead to the present depth and an electrical survey was made showing sands at 8,578-90 ft., 8,718-31 ft., and 8,738-44 ft.

This is the second well to be drilled on the prospect since the first of the year. The structure was found by the Shell Oil Co., Inc., which recently abandoned No. 1 Godchaux Sugars at a total depth of 11,005 ft. Several encouraging showings logged in the well were tested before the hole was abandoned. Location for the present well was made following a deal in which Shell Oil Co., Inc., farmed out a half interest in its acreage to Pan American Production Co. for the drilling of a deep test.

The first attempt to open Tertiary Wilcox production in the Bancroft field, Beauregard Parish, proved disappointing as Republic Production Co.'s No. 9 Lutcher Moore Lumber Co. showed salt water on a production test through perforated casing at 10,375-85 ft. The perforations have been squeezed off and another test will be made at approximately 10,292 ft. logged by an electrical survey as being the top of the Wilcox section.

The completion of a 2,600-bbl. producer from the 5,300-ft. sand in the Golden Meadows field resulted in an increase in drilling activity. The record producer was Berkshire Oil Co.'s No. 3 Nicol, Section 2-19s-22e, which flowed 2,648 bbl. daily through a ¼-in. choke from perforated casing at 5,304-11 ft. There were five additional oil wells completed and eight new operations reported.

Production from a deeper sand was indicated for the Darrow field, Plaquemines Parish, as Humble Oil & Refining Co.'s No. 16 Gumbel, Section 36-10s-2e, cored sand and sandy shale showing oil at 8,205-55 ft., the total depth. A drill-stem test was expected to be made.

An increase in drilling activity was assured in the University field, East Baton Rouge Parish, as location for eight wells were announced. Three producers were marked up for the field, and several others were in the process of completion. East of the field Farris & Golding Drilling Co. has derrick up for No. 1 D. E. McEnnis in Section 58-7s-1e. This is the same location as made several months ago by Danciger Oil & Refining Co. and later abandoned.

COMPLETIONS IN PROVEN FIELDS

Brazoria County

Hastings field: Stanolind Oil & Gas Co.'s No. 16 Sneed, perforated casing 5,517-95 ft.; 5,635-43 ft., 774 bbl., ¼-in. choke. Old Ocean field: Harrison & Abercrombie's No. 1 Grimes, 10,464 ft., 275 bbl., various chokes.

Chambers County

Anahuac field: Humble Oil & Refining Co.'s No. 43 Middleton, 7,240 ft., 648 bbl., ¼-in. choke. Humble Oil & Refining Co.'s No. 12 Broussard, 7,020 ft., gas well.

Galveston County

Hastings field: Stanolind Oil & Gas Co.'s No. 5 Ware, sand 6,053-90 ft., 542 bbl., ¼-in. choke. League City field: Phillips Petroleum Co.'s No. 1 Duggan, perforated casing 9,940-43 ft., 110 bbl. oil, 42 bbl. salt water.

Harris County

Clear Lake field: Humble Oil & Refining Co.'s No. 17-C Humble-West, 5,909 ft., 240 bbl., 7/16-in. choke. Fairbanks field: Amerada Petroleum Corp.'s No. 13 E. W. Mills, sand 6,830-47 ft., 113 bbl., ⅛-in. choke. Stanolind Oil & Gas Co.'s No. 8 W. F. Jahnke, sand 6,790-6,840 ft., 151 bbl., ⅛-in. choke. Friendswood field: Humble Oil & Refining Co.'s No. 4-B Godwin, 6,044 ft., 456 bbl., ¼-in. choke. Humble Oil & Refining Co.'s No. 30 Beamer, sand 5,987-6,044 ft., ¼-in. choke.

Jackson County

West Ranch field: Humble Oil & Refining Co.'s No. 2 Toney, 5,530 ft., 350 bbl., ¼-in. choke. Magnolia Petroleum Co.'s No. 22 West, 5,535 ft., 237 bbl., ¼-in. choke.

Jefferson County

Lovells Lake field: Humble Oil & Refining Co.'s No. 9 Broussard, perforated casing 7,787-88½ ft., 184 bbl., ⅛-in. choke. Humble Oil & Refining Co.'s No. 2 Turner, perforated casing 7,717-19 ft., 165 bbl., ⅛-in. choke.

Liberty County

Hull field: Farris Oil Co.'s No. 1 Laura Abel, 5,318 ft., dry and abandoned. Southern Oil Corp.'s No. 1 Taylor, 3,521 ft., dry and abandoned.

Polk County

Segno field: Gulf Oil Corp.'s No. 20 Wing, sand 8,106-15 ft., 603 bbl., ⅛-in. choke.

Wharton County

Louise field: Pure Oil Co.'s No. 6 Lancaster, 5,153 ft., temporarily abandoned. Pickett Ridge field: J. B. Ferguson's No. 2 Pierce sand, 4,681-95 ft., 91 bbl., ⅛-in. choke. Withers field: Texas Co.'s No. 15 Broussard, 5,542½ ft., 113 bbl., ⅛-in. choke. Texas Co.'s No. 38-B Pierce estate, 5,543 ft., 102 bbl., ⅛-in. choke. Texas Co.'s No. 13-A Thompson, 5,545 ft., 86 bbl., ⅛-in. choke.

Indiana Fields

(Continued from Page 76)

Donation 171, Township 2n-9w, was drilling below 350 ft. A. C. Thomas, No. 1 Schwab, Lot 44, Division C. Vincennes Commons, Township 2n-10w, McClosky lime at 1,800 ft., small showing of oil at 1,820-25 ft., set 5 7/8-in. casing at 1,820 ft. Hart & Williams made a location for No. 1 Hart, C NE SW Section 28-5n-7w. M. I. T. Syndicate's No. 1 McHenry, S Donation 214, Township 5n-9w, shut down at 1,080 ft.

In Daviess County Neely & Young's No. 1 Stuffle, NE NW NE Section 29-4n-5w, had McClosky lime at

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633 ft., shot of gas at 654 ft., and a hole full of water at 663 ft.; abandoned at 870 ft. Ruble's No. 1 Huff, NW SE NW Section 9-2n-5w, was shut down at 550 ft., with a string of tools in the hole.

In Hancock County J. H. Snyder's No. 1 Gates, SE SE SW Section 34-16n-7e, completed as a small gas well in Trenton lime, depth not yet available.

Posey County

In Posey County John Lindas' No. 1 Seifert, NE cor. SE SW Section 19-6s-12w, machine in for 400-ft test. Sun Oil Co.'s No. 4 Heil, SE SE SE Section 1-7s-12w, total depth 1,893 ft., fishing for sand pump. Somers & Egan's No. 2 Keck, SE NE NE Section 34-3s-14w, rigging up rotary tools. Roberts Brothers' No. 1 Keck, NW NE NW Section 34-3s-14w, corrected location, drilling at 2,280 ft. H. G. Lewis and others' No. 1 Hill, NE NW SE Section 35-3s-14w, total depth 3,115 ft., pumped 15 bbl. of oil and 7 bbl. of water per day, acidized with 1,000 gal., testing. Superior Oil Co.'s No 10 New Harmony Bank, SW SE SW Section 10-5s-14w, drilling at 2,190 ft. Wilhelm and others' No. 1 Zimmerman, SE SE SW Section 17-7s-14w, rigging up for 1,600-ft. test on Carter Oil Co.'s farm-out acreage.

Spencer County

In Spencer County Damron Brothers' No. 1 Crowder, C NE NE Section 18-7s-6w, was dry and abandoned at 1,707 ft. Glen Dean sand at 1,183 ft., Golconda at 1,278 ft., small showing of oil and water at 1,495-1,505 ft. Sunshine Oil Co.'s No. 1 Trent, NE cor. SW SE Section 11-5s-6w, drilling below 910 ft., corrected depth. Damron Brothers' No. 2 Amos Wright, C SE SE Section 19-7s-6w, drilling below 100 ft. Kentucky Natural Gas Co.'s No. 1 Houghland, C NE SE Section 19-7s-6w, set 5½-in. casing at 892 ft. W. C. Pollick and others' No. 1 Hazen, C S½ NW NW Section 19-7s-6w, drilling at 785 ft. Damron Brothers' No. 1 Howard, SW SE SE Section 35-7s-7w, top of Chester series 782 ft., drilling ahead. Kelly and others' No. 1 Niles, SE SW SE Section 35-7s-7w, hole full of water at 1,555 ft., trying to cement off water. B. K. Maitland's No. 1 Gross, 330 ft. from west and 1,155 ft. from north lines of NW NE Section 11-6s-4w, location. R. E. Cope and others' No. 1 Varner, NE NE SW Section 24-6s-5w, total depth 1,061 ft., plugged back to 1,015 ft.; will acidize at 1,002-10 ft. where there was a 2-bbl. natural showing. Major Oil Co.'s No. 1 Haynes, SE SE NE Section 11-6s-7w, drilling at 1,002 ft.

In Warrick County Hoosier Drilling Co.'s No. 1 Baum, SW SE NW Section 9-6s-7w, Ste. Genevieve lime at 1,495 ft., hole full of water at 1,564-65 ft., will drill ahead.

In Sullivan County Sisosi's No. 1 Cushman, NE NE SE Section 18-8n-10w, drilling at 600 ft. Niagaran Oil Co.'s No. 1 Riley, NW NE NW Section 33-8n-10w, spudded below 100 ft.

In Clay County Dorsey Oil Co.'s No. 1 Hickman, NW SE SE Section 15-9n-6w, drilling at 450 ft.

In Owen County W. H. Young and J. C. Ellis' No. 1 Rice, NE NE NW Section 29-11n-3w, drilling below 500 ft.

In Henry County Knightstown Natural Gas Co. made a location for No. 1 Cox, C NW SW Section 36-16n-9e.

In Marion County Jefferson's No. 1 Indianapolis Water Co., NE NE SW Section 15-16n-3e, drilling below 200 ft.

In Jay County Donald Davis' No. 1 Perry, SE NW NW NE Section 17-24n-12e, resumed drilling at 250 ft. in old hole. Another hole had been started in C S½ NW NE Section 17.

In Laporte County H. B. Phillips' No. 1 Fritzen, SE NE NE Section 7-37n-2w, spudded.

In St. Joseph County K. V. Nilson's No. 1 Kush, NE NE NE Section 8-37n-1e, was drilling below 300 ft.

In Lagrange County J. W. Hunt's No. 1 Babcock, SW SW NE Section 13-37n-9e, shut down at 1,100 ft.

In Huntington County R. L. Myers' No. 1 Cramer, E½ SW NW Section 29-26n-9e, drilling at 1,100 ft.

In Blackford County A. M. Jones' No. 1 Simonton, SW SE NE Section 15-24n-11e, shut down at 1,570 ft.

In Vanderburg County K. R. Bixby's No. 4 Glaser, SE cor. SW SW NW Section 31-5s-11w, machine in. J. L. Drake's No. 1 Keil, NW NW NW Section 5-6s-10w, shut down at 1,000 ft. Sun Oil Co.'s No. 1 Kloke, SW SW SW Section 6-2s-11w, rigging up rotary tools.

In Pike County Murphy Oil Co. set 10-in. casing at 300 ft. in No. 8 Stewart, Lot 17, Section 26-1n-9w (first report). Vern Burden's No. 1 Frederick, NE NW SE Section 28-1n-9w, shut down at 1,646 ft.

In Pike County George W. Miller's No. 1 Nixon, SE SW NE Section 14-3s-8w, estimated total depth 3,648 ft., reaming hole.

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Eastern Field Report

By STAFF CORRESPONDENT

500-Bbl. Well in Old Pool, Muskingum County, Ohio

PITTSBURGH, Pa., Oct. 9.—Two of the deep drilling wells in Southwest Pennsylvania reached the producing horizon and both so far are disappointing. In Armstrong County Peoples Natural Gas Co. topped the Oriskany sand at 6,766 ft. on the Lowry Martin farm in Wayne Township, and at 6,784 ft. it was void of any showing, but drilling is being continued. The top of the sand was extremely hard but at the present depth it has softened considerably.

In Butler County, Pennsylvania, South Penn Oil Co. topped the Oriskany at 5,449 ft. on the M. A. Fowler heirs farm in Concord Township, and at 5,460 ft. was void of any showing.

SOUTHEAST OHIO

The best producer in Southeast Ohio was W. L. Swingle and others' No. 2 George W. Bussemer, in Section 6, Harrison Township, Muskingum County. It was completed in the Medina sand at 4,259 ft. and will make about a 25-bbl. pumper.

In Coshocton County Warsaw Oil & Gas Co. completed a 30,000-cu. ft. gas well on the James Fisher farm in Section 12, Jefferson Township, in Clinton sand at 3,399 ft.

In Knox County Knox Exploration Co. completed No. 2 J. H. White, in Section 23, Union Township, in Clinton sand at 2,956 ft. and it is producing about 25 bbl. a day. In Butler Township, and the NE¼ Section 7, Ohio Fuel Gas Co. on the John W. Smith farm, drilled through the Clinton sand to 2,965 ft. and it was dry. In Section 9, Jefferson Township, Knox County, David Shafer and others drilled a dry hole on the E. J. Kaylor farm through Clinton sand to 2,850 ft.

In Washington County William Harris and others completed a ¼-bbl. pumper on the Glen Clift farm at Archers Fork in Section 27, Independence Township, in Peeker sand at 775 ft.

SOUTHWEST PENNSYLVANIA

In Allegheny County Heck & Larkin completed a 10-bbl. well on the G. Jeuther (Steve Donaldson) farm in West Deer Township, in Third and Boulder sands at 1,854 ft. D. A. McKnight and others were drilling at 1,760 ft. in the test on the John H. Flick farm, an offset.

In South Fayette Township, Allegheny County, Cox & Gibson are rigging up on the William M. Patterson farm, and Homer Nixon is building rig on the Joseph Hickman farm. In Ohio Township, F. P. Martin is drilling at 1,600 ft. on his fee. In Harrison Township, George K. Gray and others are fishing at 2,930 ft. on the Alter farm. In Jackson Township, Butler County, H. E. Etheridge has started drilling on the Lewis Stokey farm.

Clarion-Indiana-Westmoreland

In Clarion County Owens-Illinois Glass Co. completed a well on the Walter Bowersox farm in Porter Township, at 1,114 ft., with the Thirty Foot sand at 1,060-87 ft.; gas at 1,066-72 ft., and a total gage of 180,000 cu. ft. a day.

In Bell Township, Westmoreland County, Dome Gas Co. was drilling at 2,680 ft. in No. 1 L. L. Weister, and in Washington Township the Peoples Natural Gas Co. is down 3,100 ft. in No. 1 Asa Blose.

Armstrong County

In Armstrong County, Gilpin Township, Pleasant Valley Gas Co. drilled a dry hole on the J. J. Klingensmith farm, to 3,732 ft., through the Bradford sand. In Kiskiminitas Township Peoples Natural Gas Co. deepened No. 1 J. M. Dunmire to 4,185 ft. and it was dry. In Cowanshannock Township this company is drilling at 190 ft. in the William Small test, and rigging up on the France Harkleroad farm.

In Boggs Township John Wray and others were drilling at 1,200 ft. on the William Mateer farm, with about 75,000 cu. ft. of gas a day in the Hundred Foot sand at 1,181 ft. These operators have reached 137 ft. on the Walter Upperman farm. In Kiskiminitas Township the Apollo Gas Co. is drilling at 1,145 ft. on the Wilson heirs farm. In Kitanning Township Judson and others are cleaning out to deepen a well on the W. J. Gray farm.

Fayette-Greene

In Menallen Township, Fayette County, J. H. Carnell was drilling at 1,010 ft. on the Mike Uhrin farm, and the Wahler-Powers Oil & Gas Co. is shut down at 1,630 ft. in the S. H. Powers test. In Nicholson Township Duquesne Gas Co. was drilling at 2,195 ft. in No. 2 Andrew Demaske, and the Greensboro Gas Co. has the rig completed on the Mary Oravis farm.

In Greene County Equitable Gas Co. was drilling at 3,500 ft. deepening No. 1 Eli Orndoff, in Center Township, with the Fifth sand at 3,335-48 ft. and 115,000 cu. ft. of gas at 3,338 ft. In this township Morgan Henderson, agent, has resumed drilling after cementing the cave above the Nineveh Thirty Foot sand in No. 4 J. L. Metz.

In Greene Township Fred Garrison was drilling at 896 ft. in the Henderson Coal Co. test. Brummage and others were drilling at 2,620 ft. in the H. Durr test.

Washington County

In South Franklin Township, Washington County, W. B. McCloy and others completed No. 1 Rankin Clark at 1,341 ft., with the Salt sand topped at 1,238 ft.; 200,000 cu. ft. of gas at 1,238-45 ft.; sand at 1,287-95 ft.; gas at 1,288 ft., and total gage of 350,000 cu. ft. a day. Harry Williams and others are drilling at 530 ft. in No. 4 Jason Buchanan. In Amwell Township Shivers and others are drilling at 650 ft. on the T. J. Horn land. Union Gasoline & Oil Corp. is spudding No. 823 C. T. Conn, in South Franklin Township. In Morris Township same company is fishing at 1,548 ft. in No. 821 J. R. Andrews. Here, Brummage and others are spudding in on the J. Jones farm.

In Nottingham Township Kammerer and Mingo Gas Co. were drilling on the Hunter Borland farm, at 810 ft. In Bethlehem Township W. L. Potts and others had reached 2,250 ft. in the Ken Kinnamond test, with the Big Injun sand at 1,707-1,960 ft., and a show of gas at 1,825-30 ft. In West Bethlehem Township Wherry and others were drilling at 1,360 ft. in the Weir heirs test.

Deep Tests

On Chestnut Ridge in Fayette County New Penn Development Co., William E. Snee and others were drilling at 6,024 ft. on the Piedmont Coal Co. lease in North Union Township, with the top of the Tully lime at 6,020 ft., or subsea 3,842 ft., compared with a subsea depth of 3,691 ft. in No. 1 Heyn (Summit Hotel). In Maryland these operators had reached 900 ft. on the Humberson farm in Garrett County.

WEST VIRGINIA

The largest producer in West Virginia for several years is Hope Construction & Refining Co.'s No. 2 T. C. Hammett, in Grant district, Ritchie County. It was bottomed in the Squaw sand at 1,866 ft. and produced 260 bbl. in 7 hours after striking the sand, and is rated a 500-bbl. well. It is just north of the D. P. Carder farm on which several fair producers have been completed. It is part of a local pool in which production settles rapidly after the head is off.

In Grant district Bickel Oil Co. completed No. 9 Hall & Tetrick, in Maxton sand at 1,696 ft., and it is good for 10 bbl. a day.

In Calhoun County W. H. Bickel completed a 25-bbl. well on the J. E. Bigler farm in Sherman district, at 2,289 ft., or 200 ft. below the Injun sand in a gray and black sand, now believed to be the Weir sand.

Gas Wells

In Cabell County West Virginia Gas Co. completed the test on the J. T. Nicely farm in McComas district, at 3,374 ft., with Berea at 2,271-76 ft., and Brown shale at 3,042-3,374 ft. After the shot, the gage was 92,000 cu. ft. of gas a day.

In Clay County Pittsburgh & West Virginia Gas Co. completed No. 7691 D. W. Sirk farm, in Buffalo district, at 1,742 ft., as a gas well gaging 1,250,000 cu. ft. a day.

In Doddridge County L. G. Pigott, on the W. P. Pratt farm in West Union district, completed a gas well in the Gordon sand at 2,483 ft., gaging 300,000 cu. ft. a day.

In Gilmer County Paul K. Weekley completed a dry hole on the J. W. Sterns farm in DeKalb district, at 1,624 ft. It is dry.

In Hancock County R. J. Braden Co. drilled a dry hole on the F. Porters farm in Grant district through the Berea sand to 986 ft.

In Logan County Boone County Coal Co. completed No. 15 fee in Logan district, at 3,126 ft. It gaged 126,000 cu. ft. of gas per day after the shot.

In Putnam County Reishman Oil & Gas Co. deepened No. 1 W. C. May, in Curry district, from 2,185 ft. to 4,040 ft., with Brown shale at 3,264-3,590 ft. and 3,910-87 ft., and Corniferous lime at 4,039 ft., and a gage of 268,000 cu. ft. a day without a shot.

In Ritchie County Hope Natural Gas Co. completed No. 7844 A. T. Prather, in Murphy district, in Injun sand at 2,172 ft. and it had a volume of 220,000 cu. ft. a day.

In Roane County the Gerald D. Jone test on the D. L. Gandee farm in Harper district was completed at 1,725 ft. with Salt sand topped at 1,675 ft., and 200,000 cu. ft. of gas at 1,692-97 ft.

In Wayne County the Southern West Virginia Gas Co.'s No. 22 B. J. Prichard, in Union district, was completed at 1,340 ft., with Big lime topped at 1,306 ft., and a gage of 2,600,000 cu. ft. a day.

In Wood County N. B. Biddle completed a light gas well on the C. H. McKenna farm in Williams district, in the Injun sand at 1,439 ft.

Oriskany Gas Field

In Kanawha County Columbian Carbon Co. completed the A. H. Campbell test in Poca district at 5,003 ft. and it was filled back to 4,958 ft. and shot. It then gaged 5,692,000 cu. ft. a day. In this district United Fuel Gas Co.'s new gasser, on the A. A. Beane farm, completed at 4,840 ft., gaged before shot, 5,406,000 cu. ft. a day.

The Columbian Carbon Co. is drilling at 4,531 ft. in the Tignor and Griffith test; at 4,745 ft. in No. 1 H. H. Parsons, and at 1,760 ft. in No. 2. Glenn Oil & Gas Co. is drilling at 3,910 ft. in the Laura Flowers test. Spartan Gas Co. is drilling at 4,956 ft. in the J. S. and E. D. Newhouse test. Alpha Gas Co. is drilling at 850 ft. in No. 2 J. W. Legg. West Virginia Gas Corp. is drilling at 185 ft. in the P. B. Garnes test.

In Union district the Ajax Gas Co. has a location for a test on the R. W. Saunders farm, elevation 574 ft. In Elk district the Columbian Carbon Co. is down 4,696 ft. in the Lelia Hanna test, with the top of the Corniferous at 4,673 ft., and drilling at 4,100 ft. in the Tignor and Jordon test.

Michigan Field Report

By O. C. PRESSPRICH

Field Work Continues on Up Grade; 45 Drilling Permits

SAGINAW, Mich., Oct. 9.—As far as new production is concerned, the past week was only average in Michigan oil fields, but projected new development again set a record as the year's total of drilling permits passed 1,100 as the result of issuance of 45 additional franchises.

The Walker Township, Kent County, field set the pace for the week in number of wells completed, new production, and permits for new wells.

Of the state's 31 completions for the week, 16 were oil producers, 1 a new gas well, 12 dry holes sunk for oil, and 2 gas-test failures. New daily potential was increased by 8,300 bbl., due largely to the Walker showing where eight more wells had daily potential in excess of 6,100 bbl.

Meanwhile the state Oil Advisory Board was to meet Monday in Lansing to debate whether it will recommend an increase in Michigan production proration. The session was an indication of a somewhat improved condition. P. J. Hoffmaster, superintendent of wells and the official to whom any recommendations are to be made, said oil experts were watching effects of wartime demand on the Michigan market.

"We want to increase allowables when there is an increased demand and the fields can stand it without being injured," Mr. Hoffmaster said. Late in August allowable daily takes from wells in the important Michigan fields were reduced by from 25 to 50 per cent.

While considerable wildcatting failed to give any particular encouragement to prospects in undeveloped territory and new producers came only in proven fields, legal opinion stepped in late last week to prevent "a better oil-control practice" proposed by Michigan oil-well operators and indorsed by the state Conservation Department. Atty. Gen. Thomas Read held the proposal would be illegal, asserting the state's oil-control law bans a liberal interpretation that would permit operators to get more oil from fewer wells. He ruled specifically against a suggestion that the owner of a block of adjacent 10-acre drilling units be permitted to drill but one well for each two units and withdraw from that well double the amount of oil that is allowed from a 10-acre tract.

The opinion was the result of a proposition by Cities Service Oil Co. that it be allowed to develop its holdings in the Wise Township field in Isabella County on a "staggered" basis. Mr. Hoffmaster has established 10 acres as the drilling unit there and the company wanted the tract divided into 20-acre rectangular tracts, composed of two 10-acre plots. Cities Service then proposed to drill wells in alternate tracts.

Mr. Hoffmaster, in asking for the ruling, asserted the proposed system would be "a better oil-conservation practice" and would permit a more complete ultimate recovery of oil.

Michigan crude produced in August was valued at $1,860,273 while value of natural gas produced was $58,517, according to the state Tax Commission which last week announced severance taxes on August production at $38,375. Value of the crude dropped $13,000 in August, because of new proration limitations, but natural-gas production, totaling 450,532,000 cu. ft., was an increase of 35,000,000 cu. ft. over July.

On the basis of the severance tax collections, Redding field in Clare County was by far the biggest crude-producing district, with the Walker field of Kent County and the Salem field in Allegan virtually in a second-place tie.

Aside from new Walker production last week, the only sizeable new well completed was in the Redding field, where Pure Oil Co.'s No. 6-A State-Clare, Section 33, has natural potential of 1,200 bbl. daily, on the basis of an initial 3-hour open flow of 157 bbl. before the well was shut in. Allegan's Salem field recorded four producer completions, production ranging from 32 to approximately 400 bbl. per well. The best was Salem Gas & Oil Co.'s No. 3 Smith, Section 14, which produced 100 bbl. in 5½ hours after being acidized.

Three of the Walker-field wells had initial potential of better than 1,000 bbl. a day. Located in Section 29, they are the Wolverine Natural Gas Corp.'s No. 1 Kniff, 1,200 bbl.; Smith Petroleum-Strom Wagner's No. 1 Taalman, 1,800 bbl., and Fisher & McCall's No. 1 Newhouse, 1,200 bbl.

A small producer was added in Monroe County. Aside from the Salem wells, dry holes were abandoned in Hopkins, Otsego, and Valley townships of Allegan County, the latter two being wildcats. There were three more failures in Bangor, Columbia and Lawrence townships of Van Buren County. Oceana and Ottawa County tests also failed.

Permits issued were for drilling in 10 counties, 20 going to Grand Rapids, 11 to Allegan, and the rest being proposed exploratory tests with but one or two exceptions.

A summary of the week's completions follows:

Allegan County

Hopkins Township (3n-12w) — Bell & Marks, Inc.'s No. 1 Ed Brenner, NW SW SE Section 23, a dry hole, was abandoned at a depth of 1,795 ft.

Otsego Township (1n-12w)—Little Four Oil Co. abandoned No. 1 L. E. Cooley, NW NE SW Section 27, at 1,481 ft. It was a wildcat test.

Salem Township (4n-13w) — There were four producer completions in Salem, none unusual. Socony-Vacuum Oil Co.'s No. 1 Fein-Wiest Community, NE SE NW Section 2, rated 81 bbl. with some water; total depth was 1,707 ft. Packer Petroleum Co.'s No. 1 Harold Twining, SE NE SE Section 3, did but 32 bbl. a day with some water, after being acidized on completion at 1,664 ft. The best well was Salem Gas & Oil Co.'s No. 3 Frank Smith, NE SW SW Section 14, producing 100 bbl. in 5½ hours after being acidized, total depth being 1,597 ft. Salem Gas & Oil Co.'s No. 4 Smith, SE SW SW Section 14, rated 200 bbl. a day after acid treatment at 1,598 ft.

Valley Township (2n-14w)—Mill Brothers' No. 1 Ira Thorpe wildcat, NW SE SW Section 1, was abandoned as dry at 1,600 ft.

Arenac County

Clayton Township (20n-4e)—W. E. Ross abandoned an unsuccessful gas test at 1,186 ft. It was No. 2 S. S. Crandell, C SW NE Section 10.

Barry County

Maple Grove Township (2n-7w)—Strange Oil & Gas Co.'s wildcat, No. 1 M. P. Basore, NW NW NW Section 17, failed to show oil and was abandoned at the 2,035-ft. level.

Gratiot County

New Haven Township (10n-4w)—Chapman Oil Co.'s No. 1 Arthur W. Smith wildcat, C S½ NE SE Section 20, a dry hole, was abandoned. The test was drilled to 3,256 ft.

Sumner Township (11n-4w)—Lang & Lewis, Inc.'s No. 1 Graham, C NE¼ Section 32, a gas test, got no results and was abandoned at a depth of 1,011 ft.

Clare County

Freeman Township (18n-6w)—Water lessened value of Freeman Oil Co.'s No. 2 Christensen, SE NE SW Section 3, completed at 3,987 ft. After acidized, oil yield was at the rate of 180 bbl. a day. Taggart Brothers, Inc.'s No. 17 L. R. Perkins, C SE¼ Section 15, a gas test, was unsuccessful and the hole plugged after drilling had gone 1,504 ft.

Lincoln Township (18n-5w) — American Production Co. completed a natural-gas well at 1,545 ft. It is No. 1 Lake Properties, Inc., and others, C SW¼ Section 16, rating 9,200,000 cu. ft. daily.

Redding Township (19n-6w)—A 3-hour open flow of 157 bbl. was initial natural production from Pure Oil Co.'s No. 6-A State-Clare, S½ NW NW Section 33, completed at total depth of 3,876 ft.

Kent County

Walker Township (7n-12w) — Walker field's eight new producers ranged in production initially from 65 bbl. to 1,500 bbl. a day. The three biggest wells completed are in Section 29. Wolverine Natural Gas Corp.'s No. 1 George Kniff, NW SW SE, completion at 1,887 ft., rating 1,200 bbl. a day, naturally, was exceeded by Smith Petroleum Co.-Strom-Wagner's No. 1 P. J. and Mary Taalman, SW NW SW, which, on completion at 1,861 ft., had natural flow estimated at the rate of 1,800 bbl. daily. Fisher-McCall Oil & Gas Co.'s No. 1 Samuel Newhouse, SW SE NW, had initial daily flow estimated at the rate of 50 bbl. an hour, total depth being 1,868 ft. Completed at 1,914 ft., Gordon Oil Co. and others' No. 1 Kruizenga-Roosinak, NW NE SE Section 30, rated 720 bbl. a day, naturally. Gordon Oil Co. and others' No. 1 John Dykstra, NW SE NE Section 30, acidized, did but 65 bbl. a day at 1,922 ft. Of the three new wells in Section 33 the best was Ide & Glavin Development Corp.'s No. 3 J. A. Renihan, SW NW SE, with estimated natural flow of 840 bbl. daily. Certain-Teed Products Co.'s No. 1 fee, SW SE SE, produced at 250 bbl. a day after being acidized at 1,778 ft. W. S. Sprenger's No. 1 Howard Gruenbauer, SW NW SW, acidized, rated 200 bbl. a day, total depth being 1,776 ft.

Wyoming Township (6n-12w)—William R. Alexander, trustee's No. 1 A. Rodenhouse, NE SE SE Section 14, an exploratory development, acidized on completion at 1,901 ft., saw its value lessened as salt water appeared along with the 135-bbl. daily flow of oil.

Monroe County

Dundee Township (6s-6e)—Seventy barrels with water was the result from Bridger-Basin Oil Co.'s No. 1 Dusseau-LaPointe, SW SE NW Section 15, acidized, and with total depth of 2,162 ft.

Oceana County

Crystal Township (16n-16w)—No. 1 Benjamin Skidmore, Jr., C S½ SE NE Section 15, a wildcat, was abandoned by W. K. Swan at 1,930 ft.

Ottawa County

Wright Township (8n-13w) — Welsh Oil Co. abandoned at 1,946 ft. the No. 1 J. H. Host wildcat, SW SW NE Section 32.

Zeeland Township (5n-14w) — Another wildcat failure was Freeman Oil Co.'s No. 1 Henry Kloosterman. NW NE NE Section 8, on which work stopped with the hole at 1,682 ft.

Van Buren County

Bangor Township (2s-16w)—H. Brown Cannon, trustee, abandoned the No. 1 James Drake, NE NW SW Section 28, at 1,005 ft.

Columbia Township (1s-15w)—Adams Drilling Co.'s No. 1 Anna Dulsky, NE SW NE Section 29, failed to show oil and was abandoned at 1,145 ft.

Lawrence Township (3s-15w) — Fisher & McCall's No. 1 H. A. Witter, NE NE NW Section 13, also was a failure. The test was abandoned after drilling to a depth of 1,134 ft.

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ont., Oct. 9.—Crude and natural-gasoline production from all Canadian fields in July reached a new monthly high of 899,169 bbl. compared with 821,308 bbl. in June and 701,813 bbl. in July 1938. For the 7 months of 1939 Canadian production totaled 4,270,407 bbl. compared with 3,623,291 bbl. in the same period last year.

Turner Valley Completions

In West Central Turner Valley East Crest Oil Co.'s No. 4, LSD 8, Section 6-19-2w5, was shot in the lower porous zone, bringing production to 300 bbl. with heavy additional gas pressure. It is cleaning out for government test.

Extension Royalties' No. 2, LSD 11, Section 17-18-2w5, has repaired casing and is flowing steadily. Conservation board engineers are testing for allowable. Temporary allowable was set at 468 bbl., but an increase is anticipated

Tests in the Lime

In Section 25-19-3w5, West Central Turner Valley, Argus Royalties' No. 1, LSD 14, is below 6,998 ft. after getting the Madison limestone at 6,909 ft.

In Section 7-19-2w5 Anglo-Canadian Oil Co.'s No. 8, LSD 11, got the limestone at 7,316 ft. and cemented casing 10 ft. in.

In Section 32-18-2w5 Royalite Oil Co.'s No. 42, LSD 4, is below 8,315 ft., some 300 ft. in the Madison, and will probably be the next completion.

In Section 29-18-2w5 Royal Canadian Oil Co.'s No. 3, LSD 12, is below 8,515 ft., after getting the limestone at 8,379 ft

North Turner Valley

In North Turner Valley Anglo-Phillips' No. 1, LSD 14, Section 15-20-3w5, is below 238 ft. Anglo-Phillips' No. 2, LSD 13, same section, is working on cellar. Royalite Oil Co.'s No. 47, LSD 15, is working on cellar. In Section 22-20-3w5 Royalite's No. 43, LSD 2, is in the Kootenay formation below 7,393 ft. and getting close to the Madison limestone. In Section 28-20-3w5 Home Oil Co.'s No. 4, LSD 9, is in the lower Benton formation below 4,770 ft. In Section 33-20-3w5 Home's No. 3, LSD 1, is fishing at 3,883 ft. In Section 34-20-3w5 Alberta Oil Incomes' No. 1, LSD 4, is working on cellar. Newell & Chandler have the drilling contract. In the Waite Valley area National Petroleum Corp.'s No. 3, LSD 4, Section 25-20-4w5, is in the Blairmore formation below 4,120 ft. and logging much higher than recent Turner Valley west-flank tests. In the Whiskey Creek area Mar Jon Oil Co.'s No. 5, LSD 1, is below 460 ft.

West Central Drilling

In Section 18-19-2w5 Davies Petroleum's No. 5 (formerly Davolite Oil Co.'s No. 1), LSD 10, is preparing to resume from 1,880 ft. In Section 13-19-3w5 Arrow's No. 1, LSD 16, is below 1,201 ft. In Section 8-19-2w5 South West Petroleum's No. 3, LSD 3, has secured drilling permit and is working on cellar. In Section 6-19-2w5 East Crest Oil Co.'s No. 5, LSD 9, is spudding. Kamalta's No. 1, LSD 1, is rigging. In Section 5-19-2w5 Royalite Oil Co.'s No. 45, LSD 14, is below 3,276 ft. Vanpeg Royalties' No. 1, LSD 9, is below 2,311 ft.

New Tests Planned

Permit has been secured for Royalite Oil Co.'s No. 48, to be drilled in North Turner Valley in LSD 12, Section 27-20-3w5. Location is in the same section as Royalite's No. 29 Turner basin, which finished a good crude producer.

On the west flank of South Turner Valley York Oils, Ltd., is arranging to drill its No. 3 in LSD 3, Section 20-18-2w5, offsetting No. 2 producer to the south.

West Side Drilling

In Section 29-18-2w5 Command Oils' No. 2, LSD 11, is in the lower Benton formation below 5,088 ft. In Section 16-18-2w5 Okalta Oil Co.'s No. 7, LSD 3, is in the Blairmore formation below 6,150 ft. In Section 17-18-2w5 Royalite Oil Co.'s No. 46, LSD 2, is in the upper Benton formation below 4,081 ft. In Section 31-18-2w5 Anglo-Canadian Oil Co.'s No. 7, LSD 9, is in the Benton formation below 4,087 ft. In Section 8-18-2w5 Northwest-Hudson's Bay Co.'s No. 2, LSD 9, is in the upper Benton formation below 4,654 ft. In Section 5-18-2w5 Theo Grewer's No. 1, LSD 14, is straightening hole at 1,203 ft.

Calmont Development

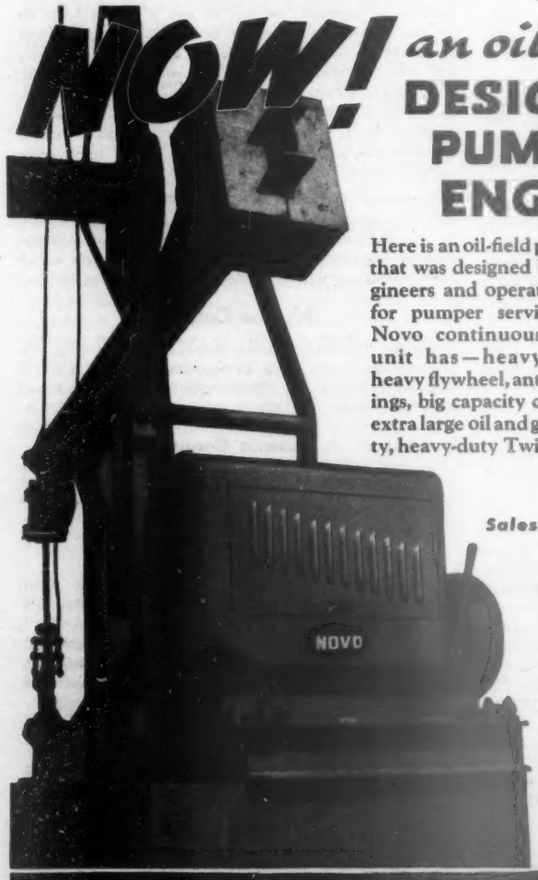
Announcement was made at the annual meeting of Calmont Oils, Ltd., at Calgary that drilling out the company's acreage will be started shortly by Northwest Co., subsidiary of Imperial Oil, Ltd. Some 320 acres are involved. The first test will be drilled in Township 19-3w5, in the northern part of West Central Turner Valley; and if production is secured, seven wells will be drilled.

Turner Valley Dividends

Dividends and royalties paid by Turner Valley companies to the end of September totaled $1,397,575 by 23 companies; and the 1939 total is expected to exceed the $2,153,773 distributed in 1938. Six companies have made initial payments this year. The largest individual payment was the June semiannual dividend of Royalite Oil Co., amounting to $535,790.

Steveville Field

Anaconda Oil Co.'s No. 1, LSD 15, Section 9-22-12w4, is below 3,252 ft. and getting close to the limestone. Standard Oil Co. of British Columbia's No. 1, LSD 13, Section 22-20-12w4, is rigged ready to spud.



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WILDCAT OPERATIONS

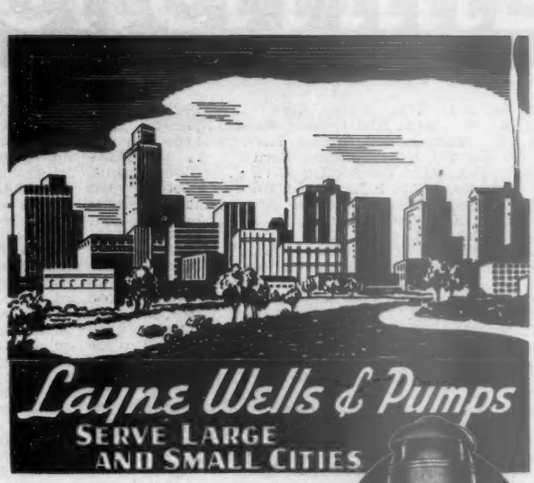
CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well, location and county—	S. T. R.	Depth	Status—
Union Oil, No. 21 Squires, Santa Maria, S. Barbara	26- 9-34	4,058	P.B. 3,888
Union Oil, No. 2-3 O'Donnell, Santa Maria, S. Barb.	21-10-34	2,388	sd. sh. drlg.
Sun-Bell Oil, No. 1 Sun, Lompoc, Santa Barbara	29- 8-34	3,196	P.B. 3,115
Lomas, E. H., No. 1 Reg, Santa Maria, S. Barbara	29-10-34	3,560	sd. sh. drlg.
Petrol Corp., No. 5-21 Magenheimer, Gato Ridge, S.B.	9- 8-32	4,057	pmp. 1,110 b.d.
Sunset Oil, No. 1 Shore, Carpinteria, Santa Barbara	32- 4-25	2,435	redrlg. 2,434
Coronet Oil, No. 1 Crown, Ojai, Ventura	17- 4-21	2,298	cleaning out
St. Louis Oil, No. 1 Williamson, Sespe, Ventura	1- 4-20	2,350	idle
Section 20 Oil, No. 21, Sespe, Ventura	20- 5-19	4,157	wet; abd.
Renard Oil, No. 1, Sespe, Ventura	6- 4-19	307	sd. sh. drlg.
Speik Oil, No. 2 Hill, Sespe, Ventura	33- 5-19	3,966	idle
Galveston Oil, No. 1 Basola, Bardsdale, Ventura	5- 3-19	3,139	pump mud
K. C. Oil, No. 1 Marr, Santa Susana, Ventura	32- 3-17	1,018	idle
Bolsa Chica Oil, No. 5 Snow, Piru, Ventura	4- 4-18	2,997	rig to pump
Continental Oil, No. 12 Grubb, San Miguelito, Vent.	24- 3-24	5,796	sd. sh. drlg.
C. C. M. Oil, No. 5 W.O.G., Padre Canyon, Ventura	23- 3-24	6,977	gr. sd.; abd.
C. C. M. Oil, No. 28-B Hobson, Rincon, Ventura	16- 3-24	4,800	O.S. drlg.
Tide Water A. O., No. 40 V.L.W., Vent. Ave., Vent.	25- 3-23	10,670	flow 195 b.d.
Tide Water A. O., No. 42 V.L.W., Vent. Ave., Vent.	23- 3-23	7,650	sd. sh. drlg.
Tide Water A. O., No. 44 V.L.W., Vent. Ave., Vent.	23- 3-23	7,152	sd. sh. drlg.
Tide Water A. O., No. 15 McGonigle, V. A., Ventura	23- 3-23	8,630	sd. sh. drlg.
Tide Water A. O., No. 16 McGonigle, V. A., Ventura	23- 3-23	6,453	sd. sh. drlg.
Tide Water A. O., No. 66 Lloyd, Vent. Ave., Ventura	26- 3-23	5,754	sd. sh. drlg.
Tide Water A. O., No. 121 Lloyd, Vent. Ave., Vent.	23- 3-23	7,598	sd. sh. drlg.
Tide Water A. O., No. 21 Hartman, Vent. Ave., Vent.	22- 3-23	4,681	sd. sh. drlg.
Shell Oil, No. 102 Taylor, Ventura Ave., Ventura	29- 3-23	7,130	deepening
Shell Oil, No. 104 Taylor, Ventura Ave., Ventura	21- 3-23	5,050	sd. sh. drlg.
Shell Oil, No. 34 Edison, Ventura Ave., Ventura	21- 3-23	8,731	completing
General Pet., No. 16 Barnard, Ventura Ave., Ventura	28- 3-23	8,180	sd. sh. drlg.
Cal. Alliance Pet., No. 1 Hartman, Vent. Ave., Vent.	22- 3-23	7,096	sd. sh. drlg.
Lloyd Corp., No. 3 Dabney, Ventura Ave., Ventura	23- 3-23	8,580	sd. sh. drlg.
Lloyd Corp., No. 4 Dabney, Ventura Ave., Ventura	23- 3-23	8,396	sd. sh. drlg.
Trico O. & G., No. 1 Newland, Delano gas field, Kern	29-24-23	1,997	sd. sh. drlg.
Belridge Oil, No. 1-27, North Belridge, Kern	1-28-20	6,998	sd. sh. drlg.
Belridge Oil, No. 28-15, North Belridge, Kern	28-27-20	5,972	sd. sh. drlg.
Belridge Oil, No. 26-39, North Belridge, Kern	26-27-20	8,275	redrlg. 8,100
Tide Water A. O., No. 24, North Belridge, Kern	21-27-20	7,553	sd. sh. drlg.
Texas Co., No. 1 Beer, Devil's Den, Kern	6-26-19	1,873	sd. sh. drlg.
Texas Co., No. 1 McLennan, Shale Hills, Kern	19-27-10	1,008	sd. sh. drlg.
O'Reily, Frances, No. 2 Seale, Edison, Kern	5-30-29	4,103	hd. sd. drlg.
Petrex, Inc., No. 2 Metro, Edison, Kern	6-30-29	4,206	flow 55 b.d.
Grizzly Bear Oil, No. 4 Kelley, Round Mtn., Kern	6-28-28	1,770	sd. sh. drlg.
Dick, W. T., No. 3 Kern, Kern River, Kern	34-28-28	630	rig to pump
Dick, W. T., No. 4 Kern, Kern River, Kern	34-28-28	652	rig to pump
Dick, W. T., No. 5 Kern, Kern River, Kern	34-28-28	642	sd. sh. drlg.
Heim & Smith, No. 14 Kern, Kern River, Kern	34-28-28	682	sd. sh. drlg.
D. B. K. Co., No. 10 Kern, Kern River, Kern	34-28-28	428	sd. sh. drlg.
Ring Oil, No. 5-A Jones, Mount Poso, Kern	29-26-28	1,779	O.S. drlg.
Chevalier Oil, No. 4 S.P., Mount Poso, Kern	3-27-28	1,501	rig to pump
Hill & Associates, No. 1-A West, Mount Poso, Kern	35-26-28	710	gr. sd. drlg.
Dilamar Oil, No. 3 Quinn, Jasmin, Kern	12-25-27	2,902	idle
Hogan Pet., No. 4 Peters, Mountain View, Kern	5-31-29	5,500	pump 290 b.d.
Hogan Pet., No. 1 Wible, Mountain View, Kern	23-30-29	2,294	sd. sh. drlg.
Texas Co., No. 2 Jewett, Arvin, Kern	16-31-29	7,750	redrlg. 6,530
Standard Oil, No. 5 Jewett, Arvin, Kern	16-31-29	6,090	sd. sh. drlg.
Richfield Oil, No. 2 Mott, Arvin, Kern	9-31-29	3,587	sd. sh. drlg.
Western Gulf Oil, No. 43-B KCL, Fruitvale, Kern	22-29-27	3,826	completing
Meridian Pet., No. 2 Deep Test, Fruitvale, Kern	23-29-27	7,930	idle
General Pet., No. 1 Mattei, Lerdo, Kern	19-28-27	3,801	dry; abd.
Union Oil, No. 4-23 Bowerbank, Goose Lake, Kern	25-29-24	9,471	sd. sh. drlg.
Union Oil, No. 41-34, KCL, Rio Bravo, Kern	34-28-25	8,780	fish D.P.
Superior Oil, No. 1 Weber, Rio Bravo, Kern	27-28-25	3,787	sd. sh. drlg.
Standard Oil, No. 1 Ross, Greeley, Kern	20-29-26	10,480	milling
Standard Oil, No. 11-20, KCL, Greeley, Kern	18-29-26	8,865	sd. sh. drlg.
Standard Oil, No. 11-21, KCL, Greeley, Kern	18-29-26	6,090	sd. sh. drlg.
Standard Oil, No. 12-5, KCL, NW. Greeley, Kern	7-29-26	9,330	gr. sd. drlg.
General Pet., No. 1 Sullivan, NE. Greeley, Kern	12-29-26	10,303	sd. sh. drlg.
Continental Oil, No. 2-D, KCL, Bellevue, Kern	14-30-26	13,588	hd. sh. drlg.
Shell Oil, No. 72-25-A, KCL, Ten Section, Kern	25-30-25	8,185	sd. sh. drlg.
Tide Water A. O., No. 46-7-E, KCL, Strand, Kern	7-30-26	7,682	sd. sh. drlg.
Shell Oil, No. 75-12-B, KCL, Strand, Kern	12-30-25	3,984	sd. sh. drlg.
Ohio Oil, No. 15-E, KCL, Canal, Kern	14-30-25	3,961	sd. sh. drlg.
Shell Oil, No. 32-14-A, KCL, Canal, Kern	14-30-25	8,285	completing
Richfield Oil, No. 12-33-A, KCL, Tupman, Kern	33-30-25	9,331	P.B. 9,040
Richfield Oil, No. 67-4-B, KCL, Cole's Levee, Kern	4-31-25	8,672	O.S. drlg.
Richfield Oil, No. 76-4-B, KCL, Cole's Levee, Kern	4-31-25	7,380	sd. sh. drlg.
Standard Oil, No. 20-2, KCL, Cole's Levee, Kern	9-31-25	8,396	sd. sh. drlg.
Standard Oil, No. 20-3, KCL, Cole's Levee, Kern	9-31-25	8,080	sd. sh. drlg.
Standard Oil, No. 20-4, KCL, Cole's Levee, Kern	9-31-25	8,350	sd. sh. drlg.
Ohio Oil, No. 4-F, KCL, Cole's Levee, Kern	11-31-25	8,320	sd. sh. drlg.
Ohio Oil, No. 5-F, KCL, Cole's Levee, Kern	10-31-25	7,338	sd. sh. drlg.
Tide Water A. O., No. 81, KCL, Cole's Levee, Kern	14-31-25	9,940	sd. sh. drlg.
Union Oil, No. 58-11, KCL, Cole's Levee, Kern	11-31-25	9,750	sd. sh. drlg.
Baker & Sonne, No. 1 Leyse, Midway-Sunset, Kern	20-32-23	2,730	sd. sh. drlg.
Quality Oil, No. 6 W.P., Midway-Sunset, Kern	27-32-23	1,941	bailing
Texas Co., No. 35 Sunset, Midway-Sunset, Kern	32-32-24	3,207	pump 201 b.d.
Merritt-Annex Oil, No. 8 Fried, Midway-Sunset, Kern	25-12-24	2,494	tested wet
General Pet., No. 1 B.V.A., Midway-Sunset, Kern	1-31-24	9,302	hd. sh. drlg.
Signal O. & G., No. 6 Kendon, Midway-Sunset, Kern	35-32-23	1,382	sd. sh. drlg.
Shell Oil, No. 45-9 B.V.A., Midway-Sunset, Kern	9-32-25	7,140	sd. sh. drlg.
National Oil, No. 33 Sunset, Midway-Sunset, Kern	35-32-23	2,409	pump 135 b.d.
Standard Oil, No. 3-5-C fee, Midway-Sunset, Kern	5-32-23	2,497	pump 12 b.d.
Ohio Oil, No. 43-3-B, KCL, Paloma, Kern	3-32-26	136	sd. sh. drlg.
Richfield Oil, No. 81-36 B.V.A., Buena Vista L., Kern	36-31-25	5,580	gas sand
Richfield Oil, No. 1, KCL, Wheeler Ridge, Kern	28-11-20	11,168	P.B. 10,856
Continental Oil, No. 1-F, KCL, San Emidio, Kern	5-10-21	8,790	hd. sd. drlg.
Bannow, L. E., No. 1 Irwin, San Emidio, Kern	15-10-23	2,040	P.B. 1,126
Shell Oil, No. 52-2-13-A, KCL, San Emidio, Kern	13-11-22	11,280	sd. sh. drlg.
Par Pet., No. 1 Line, Antelope Valley, Kern	32-25-17	2,280	sd. sh. drlg.
Section 30 Oil, No. 6 Coalinga, W. Coalinga, Fresno	30-19-15	1,260	pump 20 b.d.
Standard Oil, No. 73-19-B, NE. Coalinga, Fresno	19-19-16	8,270	flow 2,120 b.d.
Amerada Pet., No. 5-17 S.P.L., NE. Coalinga, Fresno	17-19-16	8,230	flow 1,500 b.d.
Wilshire Annex Oil, No. 1 Kearns Cent. Coal., Fresno	30-19-16	8,098	sd. sh. drlg.
Lytle, R. S., Agt., No. 32-7-F, SE. Coalinga, Fresno	7-20-16	7,082	O.S. drlg.
Lytle, R. S., Agt., No. 64-7-F, SE. Coalinga, Fresno	7-20-16	3,794	sd. sh. drlg.
Lytle, R. S., Agt., No. 86-7-F, SE. Coalinga, Fresno	7-20-16	8,260	flow 2,175 b.d.
Lytle, R. S., Agt., No. 28-18-F, SE. Coalinga, Fresno	18-20-16	7,020	hd. sd. drlg.
Texas Co., No. 3 Exeter fee, SE. Coalinga, Fresno	6-20-16	7,090	sd. sh. drlg.
Standard Oil, No. 62-13-C fee, SE. Coalinga, Fresno	13-20-15	6,150	sd. sh. drlg.
Standard Oil, No. 86-13-C fee, SE. Coalinga, Fresno	13-20-15	7,454	O.S. drlg.
Superior Oil, No. 5 fee, SE. Coalinga, Fresno	7-20-16	7,470	hd. sh. drlg.
Superior Oil, No. 3 Cagle, SE. Coalinga, Fresno	6-20-16	7,044	O.S. drlg.
Parkford, E. A., No. 1 Valley, SE. Coalinga, Fresno	24-20-15	8,080	hd. sh. drlg.
Superior Oil, No. 4 Huffman, Kettleman Hills, Fres.	29-21-17	8,526	redrlg. 7,925
K. N. D. A., No. 25-22-Q, Kettleman North, Kings	22-22-18	6,550	sd. sh. drlg.
K. N. D. A., No. 38-22-Q, Kettleman North, Kings	22-22-18	3,366	sd. sh. drlg.
K. N. D. A., No. 47-22-Q, Kettleman North, Kings	22-22-18	7,890	completing
K. N. D. A., No. 25-26-Q, Kettleman North, Kings	26-22-18	7,920	completing
K. N. D. A., No. 47-26-Q, Kettleman North, Kings	26-22-18	5,271	sd. sh. drlg.
K. N. D. A., No. 41-28-Q, Kettleman North, Kings	28-22-18	5,996	br. sh. drlg.
Standard Oil, No. 2-19-J, Kettleman North, Fresno	19-21-17	10,800	sd. sh. drlg.
Standard Oil, No. 27-19-J, Kettleman North, Fresno	19-21-17	8,840	redrlg. 8,828
Standard Oil, No. 72-19-J, Kettleman North, Fresno	19-21-17	8,820	redrlg. 8,816
Standard Oil, No. 27-7-Q, Kettleman North, Kings	7-22-18	9,190	sd. sh. drlg.
Standard Oil, No. 43-7-Q, Kettleman North, Kings	7-22-18	7,296	recmtd. 7,265
Standard Oil, No. 32-17-Q, Kettleman North, Kings	17-22-18	2,194	sd. sh. drlg.
Standard Oil, No. 63-17-Q, Kettleman North, Kings	17-22-18	8,490	cleaning out
Standard Oil, No. 52-21-Q, Kettleman North, Kings	21-22-18	3,553	sd. sh. drlg.
Standard Oil, No. 85-21-Q, Kettleman North, Kings	21-22-18	6,867	br. sh. drlg.
Standard Oil, No. 32-27-Q, Kettleman North, Kings	27-22-18	5,794	sd. sh. drlg.
Standard Oil, No. 61-27-Q, Kettleman North, Kings	27-22-18	8,202	sd. sh. drlg.
Newton, S. M., No. 1 Stafford, Panorama, S. L. Obis.	18-31-21	5,660	sd. sh. drlg.
Epco, Inc., No. 1 Epco, San Miguel, San Luis Obispo	27-25-13	6,090	sd. sh. drlg.
Priest Valley Pet., No. 1 Flat, Priest Val., Monterey	22-20-12	822	sd. sh. drlg.
Standard Oil, No. 1 Corcoran, Woodland, Yolo	29- 9- 1	3,682	14,130 m.c.f.
Texas Co., No. 3 Eureka, Eureka, Humboldt	21- 3- 1	5,067	gas well
Silver Creek Oil, No. 1, Los Pinos, San Benito	11-17-11	260	sd. sh. drlg.
Utilities Pet., No. 1, Rough & Ready Island, S. Joaq.	7- 1- 6	5,210	sd. sh. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Acd., acidized.
B.O., barrels of oil.
B.P.D., barrels per day.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
B. ck., bottom choke.
Br. sh., brown shale.
B.S., basic sediment.
C.&P., cellar and pits.
Cd. or Crd., cored.
C.D., correct depth.
Cg., coring.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg., or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.S.T., drill-stem test.
D.P., drill pipe
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging back.
P.B.P., pulling or pulled big pipe.
P.L., pipe line.
P.L.O., pipe-line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Recvd., recovered.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtrk. or St., sidetracking.
S.D.P.L., shut down for pipe line.
S.D.O., or S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas, and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T. ck., top choke.
T.P., tubing pressure.
Tr., tract.
Tstd., tested.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.O.O., waiting on orders.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shutoff O.K.
W.S.R. or W.O.S.R., awaiting standard rig.
Wtr., water.



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IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well, location and county—	S.	T.	R.	Depth	Status—
Blackwell & Sunde, No. 1 South, Torrance, L. Ang.	30-	4-13		992	abd.
Union Oil, No. 12 Carson, Dominguez, Los Angeles	33-	3-13		7,905	flow 730 b.d.
Union Oil, No. 71 Callender, Dominguez, L. Angeles	32-	3-13		7,485	sd. sh. drlg.
Union Oil, No. 72 Callender, Dominguez, L. Angeles	29-	3-13		7,400	sd. sh. drlg.
Barnsdall Oil, No. 1 Darling, Rosecrans, L. Angeles	20-	3-13		8,846	no kick
South. Cal. Pet., No. 1 Slabaugh, Rosecrans, L. Ang.	19-	3-13		7,630	O.S. drlg.
Basin Oil, No. 1 Beloil, Potrero, Los Angeles	28-	2-14		6,298	sd. sh. drlg.
Basin Oil, No. 5 Basin, Potrero, Los Angeles	34-	2-14		2,941	flow 120 b.d.
Basin Oil, No. 6 Basin, Potrero, Los Angeles	34-	2-14		1,282	idle
Tide Water A. O., No. 12 Porter, Aliso Canyon, L. A.	27-	3-16		2,160	hd. sd. drlg.
Tide Water A. O., No. 11 Fernando, Aliso Can., L. A.	27-	3-16		3,952	hd. sd. drlg.
Redwood Oil, No. 1-A Mitchell, Mint Canyon, L. Ang.	22-	4-15		427	sd. sh. drlg.
Tamas Oil, No. 1 Perkins, Newhall, Los Angeles . .	11-	3-16		1,730	sd. sh. drlg.
Barnsdall Oil, No. 6 R.S.F., Newhall, Los Angeles . .	27-	4-17		7,058	flow 775 b.d.
General Pet., No. 13 S.P., Wilmington, L. Angeles . .	2-	5-13		2,770	sd. sh. drlg.
Brookline Oil, No. 4 Harbor, Wilmington, L. Angeles	4-	5-13		3,600	sd. sh. drlg.
Hancock Oil, No. 22-A Harbor, Wilmington, L. Ang.	2-	5-13		4,057	O.S. drlg.
Long Beach Dev., No. 10-Y Harbor, Wilmington, L.A.	2-	5-13		3,951	reaming
Long Beach Dev., No. 11-Y Harbor, Wilmington, L.A.	2-	5-13		4,037	sd. sh. drlg.
Long Beach Dev., No. 12-Y Harbor, Wilmington, L.A.	2-	5-13		3,987	O.S. drlg.
Long Beach Dev., No. 3-W Harbor, Wilmington, L.A.	3-	5-13		2,437	sd. sh. drlg.
Long Beach Dev., No. 4-W Harbor, Wilmington, L.A.	3-	5-13		4,027	completing
Morgan, Roy, No. 1 Ruth, Wilmington, Los Angeles	35-	4-13		3,214	sd. sh. drlg.
Royalty Service, No. 3 Packard, Wilmington, L. A. .	33-	4-13		5,716	O.S. drlg.
Royalty Service, No. 1 Fleming, Wilmington, L. A. .	32-	4-13		3,634	completing
Royalty Service, No. 2-B Santa Fe, Wilmington, L.A.	33-	4-13		5,713	completing
Signal Oil & Gas, No. 3-S.P., Wilmington, L. A. . . .	3-	5-13		4,105	flow 505 b.d.
Signal Oil & Gas, No. 4-S.P., Wilmington, L. A. . . .	3-	5-13		2,570	sd. sh. drlg.
Union Pacific R. R., No. 117, Wilmington, L. A. . . .	34-	4-13		3,112	flow 290 b.d.
Union Pacific R. R., No. 118, Wilmington, L. A. . . .	34-	4-13		2,550	sd. sh. drlg.
Union Pacific R. R., No. 119, Wilmington, L. A. . . .	3-	5-13		2,698	sd. sh. drlg.
Union Pacific R. R., No. 120, Wilmington, L. A. . . .	3-	5-13		2,646	sd. sh. drlg.
Union Pacific R. R., No. 20-E, Wilmington, L. A. . .	3-	5-13		2,280	sd. sh. drlg.
Kern Oil, No. 24 Monterey, Montebello, L. A.	2-	2-12		7,655	pipe bad
Kern Oil, No. 28 Monterey, Montebello, L. A.	2-	2-12		6,731	pump 85 b.d.
Kern Oil, No. 30 Monterey, Montebello, L. A.	2-	2-12		7,710	flow 730 b.d.
Standard Oil, No. 8 Whitehead, Montebello, L. A. . .	3-	2-12		7,715	flow 220 b.d.
Union Oil, No. 5 Wilcox, Montebello, Los Angeles . .	11-	2-12		7,534	fish D.P.
Union Oil, No. 7 Wilcox, Montebello, Los Angeles . .	11-	2-12		7,640	O.S. drlg.
Union Oil, No. 10 Howard & Smith, Montebello, L.A.	11-	2-12		5,860	sd. sh. drlg.
Union Oil, No. 7 Paul Howard, Montebello, L. A. . .	11-	2-12		6,990	sd. sh. drlg.
Albertson Oil, No. 1 Schnakenburg, Montebello, L.A.	3-	2-12		7,686	O.S. drlg.
Beacon Oil, No. 1 Caneer, Montebello, Los Angeles .	11-	2-12		3,990	sd. sh. drlg.
Bush Oil, No. 1 Mihlfred, Montebello, Los Angeles .	11-	2-12		2,874	sd. sh. drlg.
Bush Oil, No. 1 Zanetti, Montebello, Los Angeles . .	3-	2-12		4,366	sd. sh. drlg.
B-A Oil Prod., No. 1 H. & S., Montebello, L. A. . . .	11-	2-12		7,634	completing
B-A Oil Prod., No. 2 H. & S., Montebello, L. A. . . .	11-	2-12		7,635	completing
B-A Oil Prod., No. 1 Ryder, Montebello, Los Angeles	11-	2-12		7,605	completing
Caminol Co., No. 2-16 Cowan, Montebello, L. A. . . .	2-	2-12		4,393	sd. sh. drlg.
C. A. P. Oil, No. 1 Dutch, Montebello, Los Angeles .	11-	2-12		4,996	redrlg. 3,896
Crestline Oil, No. 1 Beverly, Montebello, L. A. . . .	11-	2-12		5,374	sd. sh. drlg.
Crail Bros., No. 2 Cowan, Montebello, Los Angeles .	1-	2-12		3,982	sd. sh. drlg.
Dutch Oil, No. 1 Schelnik, Montebello, Los Angeles	3-	2-12		5,897	sd. sh. drlg.
East Mont. Oil, No. 1 Rissinger, Montebello, L. A. .	12-	2-12		7,480	sd. sh. drlg.
East Mont. Oil, No. 2 Rissinger, Montebello, L. A. .	12-	2-12		7,623	completing
Fullerton Oil, No. 2 Trustee, Montebello, L. A. . . .	12-	2-12		7,600	O.S. drlg.
Fullerton Oil, No. 2 Scott, Montebello, Los Angeles	1-	2-12		6,009	sd. sh. drlg.
Graham-Loftus Oil, No. 2 Coffman, Montebello, L.A.	11-	2-12		5,370	sd. sh. drlg.
Hathaway Oil, No. 2 Dore, Montebello, Los Angeles	11-	2-12		6,605	P.B. 5,770
Larson Drlg., No. 3 Van Deusen, Montebello, L. A. .	11-	2-12		4,580	sd. sh. drlg.
Mabee, J. E., No. 36 Monterey, Montebello, L. A. . .	3-	2-12		6,822	D.P. stuck
McVicar & Rood, No. 4 Manz, Montebello, L. A. . . .	2-	2-12		7,620	flow 420 b.d.
McKeon, John, No. 1 Travis, Montebello, L. A. . . .	11-	2-12		7,625	completing
Montebello Res. Oil, No. 1 Reservoir, Mont., L. A. .	2-	2-12		7,335	redrlg. 7,140
Mono Oil, No. 1 Foreman, Montebello, Los Angeles	2-	2-12		5,672	sd. sh. drlg.
Montebello Oil, No. 1 Nordon, Montebello, L. A. . . .	3-	2-12		4,384	sd. sh. drlg.
Pacific-Amer. Oil, No. 1 Groen, Montebello, L. A. . .	11-	2-12		5,962	sd. sh. drlg.
Pueblo Oil, No. 1 Bird, Montebello, Los Angeles . .	11-	2-12		7,657	flow 1,080 b.d.
Pongratz Pet., No. 2 Newmark, Montebello, L. A. . .	3-	2-12		5,631	sd. sh. drlg.
Sunset Oil, No. 1 Howell, Montebello, Los Angeles . .	11-	2-12		7,431	sd. sh. drlg.
Sunset Oil, No. 1 Robinson, Montebello, Los Angeles	11-	2-12		2,267	sd. sh. drlg.
Star Pet., No. 1 Community, Montebello, L. A. . . .	11-	2-12		7,519	O.S. drlg.
Texas Co., No. 1 Wilcox, Montebello, Los Angeles .	3-	2-12		6,650	sd. sh. drlg.
Traders Oil, No. 2 Center, Montebello, Los Angeles .	2-	2-12		4,998	sd. sh. drlg.
United Mont. Oil, No. 1 Lot, Montebello, Los Angeles	11-	2-12		7,418	tested wet
United Mont. Oil, No. 2 Lot, Montebello, L. A. . . .	11-	2-12		6,355	sd. sh. drlg.
United Mont. Oil, No. 3 Lot, Montebello, L. A. . . .	11-	2-12		3,170	sd. sh. drlg.
Wood-Callahan Oil, No. 1 Thill, Montebello, L. A. . .	11-	2-12		5,106	sd. sh. drlg.
York Oil, No. 1 Long, Montebello, Los Angeles . .	3-	2-12		6,340	sd. sh. drlg.
York Oil, No. 6 Mulholland, Montebello, Los Angeles	2-	2-12		5,563	sd. sh. drlg.
York Oil, No. 1 Lehman, Montebello, Los Angeles	10-	2-12		7,431	O.S. drlg.
Kelso, F. W., No. 1 Brea, Puente Hills, Los Angeles	13-	2-10		2,405	fish D.P.
Hilldon Oil, No. 3 Amebco, Long Beach, Los Angeles	13-	4-13		5,290	completing
Dormax Oil, No. 1 Signal, Long Beach, Los Angeles	30-	4-12		8,930	sd. sh. drlg.
Richfield Oil, No. 8-B City, Long Beach, L. A. . . .	29-	4-12		2,397	sd. sh. drlg.
Rolling Hills Pet., No. 1 Weston, Palos Verdes, L.A.	27-	4-14		6,350	sd. sh. drlg.
Traders Oil, No. 1 Wagner, Richfield, Los Angeles	22-	3-	9	3,650	rig to pump
Great Northern Oil, No. 1 Oak, Richfield, L. A. . . .	28-	3-	9	1,296	sd. sh. drlg.
Sonwell Oil, No. 1 Anaheim, East Coyote, Orange . .	13-	3-10		1,853	sd. sh. drlg.
Southwest Expl., No. 22 State, Hunt. Beach, Orange	10-	6-11		5,059	sd. sh. drlg.
Sherin Oil, No. 4 Farnsworth, Hunt. Beach, Orange	34-	5-11		3,600	cleaning out
Owen, W. D., No. 1 Montgomery, H. Beach, Orange	36-	5-11		1,250	sd. sh. drlg.

OKLAHOMA

Week Ending October 7

NORTHERN OKLAHOMA

Caddo County

Sinclair Prairie Oil Co. No. 1 Gorman. SW NW NW Sec. 1-16-13w. S. heavy oil; cd. 6,442-49 ft.; Wdfrd. 6,600 ft.; drlg. 6,767 ft.

Canadian County

W. R. Ramsey's No. 1 Mansfield. C NW NE Sec. 16-14-9w. Lytn. 6,250-80 ft., N.S.; drlg. 6,556 ft.

Cleveland County

Nels Burton No. 1 Boggs. NE NE SE Sec. 16-9-2w. 2nd Wlx. 7,585 ft.; T.D. 7,646 ft.; P.B. 7,473 ft.; S.D. with 1-700 ft. oil and 1,000 ft. W.I.H.

Nels-Burrton No. 1 Hirsch. NW NW NE Sec. 17-9-2w. O.W.P.B.; O.T.D. 7,692 ft.; T.D. 7,695 ft.; swbd. 250 B.F. in 24 hrs.; 10% B.S.

Sinclair-Prairie No. 1 Ward. SE SE SE Sec. 30-7-1. Hntn. 6,185 ft.; Vla. 6,408 ft.; open 30 min. at 6,800 ft., rec. S. W.; P.B. to 6,782 ft.; drld. plug; fresh wtr. and scum oil; to acd.

Comanche County

Mid Night Oil No. 1 Howe. NW NW NE Sec. 30-2-13w. O.W.D.D.; O.T.D. 703 ft.; drlg. 906 ft.

Creek County

Sunray Oil Co. No. 1 Harris, SW SW NE Sec. 30-14-7. T.D. 2,927 ft.; est. 370,000 cu. ft. gas.

Garvin County

Robinson & Midco's No. 1 Clay, SW SW NW Sec. 21-4-3. Drlg. 1,405 ft.

Grady County

Sinclair Prairie's No. 4 Charleston, NE NE SE Sec. 27-5-8w (O.W.D.D.); gas 3,330-50 ft.; T.D. 3,711 ft.; ga. 1,760,000 cu. ft. gas; S.I. to perf.

Grant County

Magnolia Pet. Co.'s No. 1 Margay-Johnson, SW SW NE Sec. 29-25-5w. Drlg. 3,965 ft.

Greer County

C. S. Amos No. 1 Banks, C NW SW Sec. 21-7-22w. S.O. in wash. 1,525-40 ft.; T. D. 1,616 ft.; abd.

Jackson County

English Drlg. Co.'s No. 1 Aetna Life, SE SE NE Sec. 26-3-20w. Drlg. 955 ft.

Jefferson County

H. M. Weir No. 1 Carmichael, NE NE SW Sec. 23-7s-7w. Drlg. 3,525 ft.

Kay County

E. W. Marland No. 1 Crook, SW SW SE Sec. 21-26-3. T.D. 1,627 ft.; D.&A.

Kingfisher County

Anderson-Prichard No. 1 Geis, C NE SW Sec. 15-18-9w. Lytn. 6,450-6,510 ft.; drlg. 7,945 ft.

Ace Gutowsky No. 1 Lankford, NE NE SE Sec. 34-17-6w. Miss. 7,014 ft.; Woodford 7,531 ft.; Msnr. 7,562 ft.; Wlx. 8,105 ft.; 2nd Wlx. 8,275 ft.; T.D. 8,330 ft.; S.D.O.

Kiowa County

Bollen-Dilliard & Roberts No. 1 Holcomb, NE NE SW Sec. 25-7-19w. T.D. 1,400 ft.; S.D.; csg.

Hagerling et al No. 1 Bozeman, SE SE NE Sec. 14-5-18w. Drlg. 1,286 ft.

C. J. Hagerling No. 1 Kimray, SW SW NW Sec. 36-5-18w. Drlg. 1,500 ft.

Lewis & Myers' No. 1 Rhyne, SE SE SE Sec. 29-7-17w. T.D. 1,191 ft.; D.&A.

Lincoln County

Black Gold No. 1 Locquchment, NE NE NE Sec. 28-14-6. T.D. 3,175 ft.; est. 5 B.O.P.D.; S.D.

R. L. Kemp's No. 1-A Burke, NE SW NE Sec. 20-17-6. Prue 2,864-2,908 ft., T.D.; shot and C.O.

McIntosh County

W. B. Pine No. 1 Marlin, C N½ SE NE Sec. 14-11-16. Gas sd. 2,360 ft.; rng. 5-in.

Scruggs et al's No. 1 Lanning, SE SW SW Sec. 19-12-15. Drlg. 2,756 ft.

Noble County

Franks & Ellis' No. 1 Stranka, SW SW NW Sec. 35-24-1w. T.D. 1,045 ft.; fighting cave.

Oklahoma County

Hall & Briscoe No. 1 Thompson, SW SW NE Sec. 28-13-1. S.O. 4,803-27 ft.; T.D 6,058 ft.; P.B. 5,185 ft.; tstg.

Osage County

Midco Oil Co.'s No. 1 Osage, NE NE SW Sec. 17-22-8. S.D. 2,847 ft.

Pawnee County

Ed Kelly No. 1 Hill, SW SW SE Sec. 1 21-5. Drlg. 3,250 ft.

Payne County

Blackwell O. & G.'s No. 1 Davis, SE SE SE Sec. 24-18-1. Wlx. 4,944-61 ft.; 2nd Wlx. 5,055 ft.; T.D. 5,066 ft.; D.&A.

C. R. Hoagland No. 1 Stanolind, SE SE SW Sec. 27-18-4. Miss. 3,800 ft.; T.D 3,905 ft.; D.P. stk.

C. F. Newsom's No. 1 Jones, NE NE SW Sec. 15-18-3. Drlg. 3,085 ft.

Pontotoc County

C. C. Marchant's No. 1 Phillips, C W½ SW NE Sec. 8-4-5. S.D. 2,040 ft.

Smith & Bruson No. 1 Kann, SE SE NE Sec. 13-3-4. T.D. 709 ft.; D.&A.

Simpson-Roodhouse's No. 1 McKay, SW SW NE Sec. 1-2-7. Drlg. 1,782 ft.

Pottawatomie County

E. P. Kerr's No. 1 Harrington, NW NW NW Sec. 24-9-4. R.U.S.T. 4,535 ft.; drld. plug and rec. S.W.; D.&A.

Neustadt et al No. 1 Howeth, NE SE NE Sec. 14-6-4. Sd. and S.S.O. 3,455-60 ft S.D. 5,060 ft.

Seminole County

Sands Pet. Co.'s No. 1 Misselda, NW NW SE Sec. 13-7-5. Cd. 3,120-34 ft., T. D.; D.&A.

Sequoyah County

Thompson Bros. No. 1 Ruby, NW NW NE Sec. 30-12-22. Hntn. 1,451 ft.; T.D 1,912 ft. (cor.); S.D.

Washita County

Continental Oil Co. No. 1 Proctor, C NW Sec. 28-10-20w. T.D. 14,540 ft.; recon ditioning hole.

SOUTHERN OKLAHOMA

Choctaw County

Letchfield & Kirksly No. 1 Schuester SW SE SW Sec. 13-6s-14. Cd. 1,169-81 ft., L.&sd.; S.D. 1,184 ft. for core bbl.

Clyde Ross et al No. 1 Hardy, SE SE NW Sec. 21-7s-15. T.D. 1,634 ft.; W.O.C

Jefferson County

Fred Land et al's No. 1 Barrett, NE SE SE Sec. 14-6s-6w. Sd. 1,852 ft., S.O.; D P. stk. at 1,100 ft.; T.D. 1,890 ft.

Love County

Neff et al's No. 1 Brahma, NW NW SW Sec. 35-6s-2e. S.S.O. 1,555-90 ft.; drlg. 1,978 ft.

Marshall County

Hughes et al No. 1 Vittitto, C NE SE Sec. 11-5s-4e. O.W.D.D.; O.T.D. 7,100 ft.; T.D. 7,110 ft.; S.D.

Johnson et al No. 1 Godfrey, SW SE NE Sec. 14-6s-6e. Drlg. 2,269 ft.

KANSAS

Week Ending October 7 (Descriptions are East unless marked otherwise)

Barton County

Aylward Prod. et al's No. 1 Harzman, C W½ NW SW Sec. 33-16s-11w. Drlg. 1,490 ft.

B. B. & M. Drlg. Co.'s No. 1 Krier, CEL SE SE Sec. 30-16-11w. Drlg. 535 ft.

Broderick & Gordon's No. 1 Kowalsky, C E½ SE NE Sec. 30-20-11w. Lans. 3,110 ft.; Simp. 3,360 ft.; T.D. 3,442 ft.; N.S.; D.&A.

Crown Pet. Co. No. 1 Marchand, NE SE NW Sec. 13-20-11w. Drlg. 2,910 ft.

Seaney & Clampitt's No. 1 Schauf, CSL E½ SW Sec. 1-16-12w. Drlg. 1,877 ft.

Butler County

Carey & Jennings No. 1 Kelly, C SW Sec. 20-27-4. S.D. 2,660 ft.

Cromwell & Lewis No. 1 Stern, NW NW NW Sec. 27-27-6e. M.I.M.

Marylyn Oil et al No. 1-A Hoard, SW NE NE Sec. 28-29-8. Drlg. 1,745 ft.

Simpson & Noble et al's No. 1 Marsh, NW NW SW Sec. 23-28-6. Miss. 2,810 ft.; S.O.; H.F.W. 3,251 ft.; T.D.; D.&A.

Coffey County

Hollett's No. 1 Butler, SE SW SE Sec. 28-20-15. Rng. 10-in. 709 ft.

Cowley County

Garden's No. 1 Rahn, SW SW NW Sec. 13-34-5. Drlg. 3,258 ft.

E. B. Shawyer's No. 1 Henderson, C W½ NE NE Sec. 4-33-6. Drlg. 1,355 ft.

Gerald Smith et al's No. 1-B Haney, CEL NW SW Sec. 9-33-6. Drlg. 900 ft.

Dickinson County

Franks et al No. 1 Huffman, NW NW SW Sec. 11-13-1. Hntn. 2,807 ft.; Vla 3,048-55 ft.; S.S.O. 3,156-65 ft.; C.O 3,170 ft.

Douglas County

Greenway Oil Co.'s No. 1 Grosdedier, C E½ SE NE Sec. 24-13-20. Drlg. 450 ft.

Franklin County

Security O. & G. Co. No. 1 Teall, C SW NW Sec. 11-17-17. Rng. 8-in. 1,050 ft.

Greenwood County

Chas. Barker's No. 1 Gregg, SW NW SE Sec. 35-25-12. (O.W.D.D.). O.T.D. 1,660 ft.; drlg. 1,955 ft.

Henderson & Marcus' No. 1-A Smith, NW NW SE Sec. 8-24-11. Drlg. 450 ft.

A. A. Hinze et al's No. 1 Hester, NW SW NE Sec. 1-22-12. S.D. 510 ft.

Lawrence Spencer's No. 1 Edwards, NW NW SW Sec. 32-24-12. Drlg. 50 ft.

Jefferson County

Continental Oil's No. 1 Berridge, NW NW SW Sec. 8-9-17. Miss. 2,040 ft.; drlg. 2,205 ft.

C. L. Sheedy et al's No. 1 O'Neill, SE SW NW Sec. 34-8-19. Drlg. 2,000 ft.

Johnson County

F. O. McCain's No. 1 Lyons, NW SW NE Sec. 27-13-22. Drlg. 360 ft.

Kingman County

Skelly Oil Co. No. 1 Miller, CSL N¼ NE Sec. 31-27-10w. Set 7-in. 4,067 ft.; R.U S.T.

Lyon County

Bruce's No. 1-A fee, NW NW NW Sec. 13-18-10. Drlg. 2,200 ft.

McPherson County

H. C. Bennett No. 1 Peterson, CSL NW NW Sec. 32-20-5w. T.D. 3,365 ft.; S 156 B.O. in 6 hrs.

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Montgomery County

Lerke & Whortan No. 1 Clemmer, C SW SW Sec. 21-32-15. Arb. 1,530 ft.; set 5-in. csg.; W.O.C.

Osage County

J. M. Edwards No. 1 Detrick (O.W.D.D.), C NW SE Sec. 21-14-15. O.T.D. 1,200 ft.; S.G. in sh. 1,618-24 ft.; S.D. 1,650 ft.

Pratt County

Skelly Oil Co. No. 1 Royse, C SW Sec 9-28-11w. Lans. 3,604 ft.; Vla. 4,246-49 ft.; T.D. 4,268 ft.; S.S.O.; 802,000 cu. ft. gas.

Rice County

Fred Jones et al No. 1 Benhke, NW SW NW Sec. 25-18-10w. S.O. 2,670-75 ft.; drlg. 2,775 ft.

Phoenix Drlg. No. 1 Linville, SW SW SE Sec. 4-20-10w. Simp. 3,375 ft.; Arb. 3,388 ft.; H.F.W. 3,396 ft.; S.D. 3,400 ft.

Saco Oil's No. 1 Habeger, SE SE SW Sec. 12-18-10w. Drlg.

Vickers Pet. Co. No. 1-A Rodenberg, CNL NW¼ Sec. 8-18-10w. Lans. 2,930 ft.; Arb. 3,265-81 ft., T.D. N.S.

Rooks County

Broadview Oil No. 1 Baxter, NE SW SW Sec. 35-8-16w. Lans. 3,180 ft.; S.S.O.; T.D. 3,263 ft.; P. 89 B.O. in 7 hrs.; pot. 269 B.O.P.D.

Sedgwick County

Cameron & Spencer No. 1 Fields, NE NE NW Sec. 4-28-2. K.C. 2,516 ft.; Miss. 2,980 ft.; H.F.W. 3,007 ft.; S.D.

Parks et al's No. 1 Fisher, NW NW NE Sec. 25-26-1. Miss. 3,029-46 ft., T.D.; H.F.W.; D.&A.

Stafford County

Continental Oil Co. No. 1 Keller, SE SE SE Sec. 15-24-13w. S.O. 3,733-43 ft., cd. 4,111-16 ft. and rec. 5 ft. sat.; T.D 4,116 ft.; 3,900 ft. O.I.H.

Woodson County

Bird, Hanley & Sheedy No. 1 Pingrey C S½ SE Sec. 22-25-15. Spd.

Henderson & Keene's No. 2 Piper, NW NW SE Sec. 19-23-15. Spd. 60 ft.

MISSOURI

Adair County

Etting et al's No. 1 Clark, NW NE SE Sec. 8-63-14w. S.D. 180 ft.

Mason Oil Co. No. 1 McGonigle, CNL SE NW Sec. 20-63-13w. S.O. 1,002-73 ft., 1,116-63 ft.; St. Peter 1,238 ft.; Arb. 1,431 ft.; pulled 5-in. and R.B. to 1,200 ft.; perf.; H.F.W.; acd.; swbd. all wtr.; P.B. 1,110 ft.; shot and acd.; T.D. 1,431 ft.; D.&A.

Andrew County

Davis Bros. et al No. 1 Gee, NW NW SE Sec. 28-60n-35w. S.O. in Bart. 99' ft.; S.O. 2,065-75 ft.; Vla. 2,381 ft.; S. D. 2,407 ft.

Bates County

Monarch Roy.'s No. 1 Lee, C SW SE Sec. 11-39-30w. S.O. 834-36 ft.; T.D. 1,-934 ft.; S.D.

Bollinger County

Deimund Oil No. 1 Cooper. SE SE SE Sec. 14-29-9e. Drlg. 1,780 ft.

Buchanan County

Miller et al's No. 1 Carrough, C SE SE Sec. 24-57-35w. T.D. 95 ft.; installing elec. power.

Butler County

Coastal Pet. et al No. 1 Pierson, SW NE NW Sec. 27-22-6e. S.D. 149 ft. (cor.)

Charlton County

L. E. Mummert et al's No. 1 Rickert, NW NE SE Sec. 26-54-20w. Loc.

Clay County

Pabelo Dev. Co.'s No. 1 Bartlett, SE NW NE Sec. 34-52-32w. T.D. 755 ft.; P.B. 636 ft.; 170,000 cu. ft. gas; comp.

Pabelo Dev. Co.'s No. 5-A Robb, NW NW SE Sec. 36-52-32. T.D. 600 ft., S.G.; S.D.O.

Clinton County

C. E. King et al's No. 1 Vanderau, SE NE SW Sec. 18-55-31w. Drlg. 933 ft.

Daviess County

H. H. Francis' No. 1 Louis, SW NW SW Sec. 29-59-27w. Drlg. 485 ft.

DeKalb County

Geo. W. Moore No. 1 McQuate, NE SW SW Sec. 11-57n-31w. Miss. 1,075 ft.; S.D. csg. 1,500 ft.

Harrison County

H. V. Elwell et al's No. 1 Maple, NE SW SE Sec. 3-62-26w. Arb. 1,805 ft.; S.S.O. 1,727-29 ft.; T.D. 1,907 ft.; D.& A.

Holt County

Brin & Nathan No. 1 Decker, C NW NW Sec. 1-61-38w. Drlg. below 793 ft.

Markham et al No. 1 Gaffney. SW SE SW Sec. 24-63-40w. Spd. and S.D.; abd.

Jackson County

Hulse & Christopher's No. 1 Wiston, NE NW SE Sec. 22-49-32w. S.D. 510 ft. to D.D.

Knox County

W. H. Oberithier et al's No. 1 Campbell, C NE Sec. 18-61-12w. C.&P.

Livingston County

Davis Bros. No. 1 Minning, SE SE NW Sec. 22-58-23w. Hntn. 783 ft.; drlg. 1,-040 ft.

Mercer County

Geo. W. Moore No. 1 Moss, NW SW SE Sec. 30-65-24w. Hntn. 1,273 ft.; T.D. 1,869 ft.; fsg. 6-in.

Platte County

Missouri Valley G. & O.'s No. 1 Herrington, C SE NE Sec. 12-51-34w. Drlg. 475 ft.

Putnam County

Morrow et al's No. 1 Cooley, SE SE NW Sec. 33-64-17w. T.D. 880 ft.; perf. 868 ft.; N.S. to reset pkr.

Randolph County

A. A. Ash et al's No. 1 Alexander, C SE Sec. 14-55-13w. Loc.

Ray County

Loomis-Jordan No. 1 Macey, NE SW NW Sec. 10-53-27w. S.O. 330 ft., T.D.; set csg.

Schuyler County

T. E. Baldwin No. 1 May Johnson, NW NE NE Sec. 21-65-15w. S.D. 322 ft.

Shelby County

Wright & Turner No. 1 Turner, C NW NW Sec. 27-59n-9w (wildcat). S.D. 650 ft.; abd.

St. Charles County

Brooks et al's No. 1 Stewart, SE SE SE Sec. 4-46-2e. S.D.O. 507 ft.

Howard County

Wm. James No. 1 I. M. Brooks, 115 ft. W, 462 ft. N, SE cor. NW NW Sec. 2-8s-27w. Pulled 10¾-in. csg.; rmd. to bttm.; drld. to 350 ft. and abd.; jnkd.; skidded 15 ft. south and began new hole.

Independence County

C. P. Daniels' No. 1 Kelly Wyatt, 1,085 ft. S, 50 ft. E, NW cor. SE Sec. 16-12n-5w. T. gas sd. 598 ft.; 8¼-in. csg. 597 ft.; S.G. sd. 603 ft.; W.O.

Lafayette County

East Texas Ref. Co. et al's No. 1-B Bell, C N½ SE NW Sec. 19-16-23. T.D. 3,-605 ft.; set 5½-in. csg. 3,439 ft.; S.W. 3,470 ft.; P.B. 3,440 ft.; perf. csg. 2,-305-12 ft.; T. Tokio 2,307 ft.; swbd. and flwd. 17-gr. oil; P.B. 2,320 ft. and set pkr. 2,314 ft.; ran 2½-in. tbg. 385 ft.; jetting with gas; flwg.; no ga.

Standard Oil Co. of La.'s No. 1 Allen Foster, 570 ft. N, 650 ft. E, SW cor. NW SW Sec. 7-16-22. Set 9⅝-in. csg. 2,073 ft.; set 6-in. csg. 7,248 ft.; T.D. 7,260 ft.; W.O.C.

Little River County

C. & M. Drlg. Co.'s No. 1 Strawn, NW cor. SE SW Sec. 17-10-32. Recmtd. csg. 1,590 ft.; tstd. S.W.; S.O. 1,763-70 ft.; T.D. 1,810 ft.; W.O.C.

Lonoke County

Carlisle Oil Dev. Co.'s No. 1 Walthour-Flake, 1,283 ft. S, 345 ft. E, NW cor. Sec. 10-1n-7w. O.W.D.D.; O.T.D. 2,050 ft.

J. F. Russell's No. 1 J. T. Gunter, 440 ft. N, 577 ft. W, SE cor. Sec. 17-5n-10w. Reported S.O. 1,384 ft. and 2,111 ft.; W.O. 2,111 ft.

W. L. Tedford No. 1 Anderson, Sec. 7 4n-9w. Set 6¼-in. csg. 1,025 ft.; reseating 6-in. csg. to S.O.W. 1,125 ft.; U.R. 6¼-in. csg. 1,175 ft.; reported S. O. 940 ft.; S.D. 1,234 ft.; rig rep.

Miller County

W. C. Feazel's No. 1 Norton, 454 ft. N, 350 ft. W, SE cor. Sec. 18-20-27. Drlg. 4,960 ft.

Nevada County

Berry Asphalt Co.'s No. 1 Calloway-Howell, 175 ft. W, 220 ft. S, NE cor. NE SW Sec. 5-14s-20w. M.I. rig.

O. T. Clark's No. 1 T. M. Bemis, 330 ft. NW cor. NW NE Sec. 23-10s-22. M. I.M.

Ouachita County

Liberty Oil Co.'s No. 1 P. T. Hildebrand, 660 ft. S, 330 ft. W, NE cor. SE Sec. 28-15-15. O.W.W.O.; O.T.D. 4,-934 ft.; will P.B. and perf. Toklo sd.

Harry Steffen's No. 2 F. A. Laney, Sec. 36-15-16. Stk. 5-½-in. 2,777 ft.; set 966 ft. at 2,777 ft.; T.D. 2,832 ft.; shot with nitro 2,575-78 ft.; pmpd. est. 50 B.F.P. D.; S.S.O.; O.T.D. 2,832 ft.; rpd. csg. 2,-570-78 ft.; rpd. csg. 2,306-10 ft.; pmpd. est. 600 bbl. S.W. per day; perf. csg. 1,990-2,020 ft.; W.O. 2,832 ft.

A. B. Turner et al No. 1 Cook Est., C NW SW Sec. 27-15-18. 10-in. 210 ft.; T. Nacth. 1,588 ft.; D.S.T. 1,588-1,613 ft.; 2½ min.; ½-in. cks. T.&B.; est. 25,000,000 cu. ft. gas daily; R.P. 500 lb.; D.S.T. 1,614-18 ft.; 10 min.; rec. 500 ft. oil, 17-gr. and 200 ft. S.W.; W. O. 1,618 ft.; M.I. csg.

Pulaski County

Coker Oil Corp.'s No. 1 Huffman, 330 ft. NW cor. NW SW SW Sec. 29-4n-11w. 8¾-in. csg. 206 ft.; S.D. 1,763 ft.

Sevier County

R. A. McArthur's No. 1 Bell est., 20 ft. SE cor. SE SW Sec. 29-9s-32w. Set 12½-in. csg. 100 ft.; S.D.; drlg. wtr. well.

Union County—Schuler

Lion Oil Ref. Co.'s No. 2 Calloway, 330 ft. SE cor. SE SE Sec. 13-18-18. Drlg sdy. sh. 7,145 ft.

Lion Oil Ref. Co.'s No. 7-B Morgan, 330 ft. NW cor. W½ SE Sec. 18-18-17. Drlg. gr. sh. 4,275 ft.

Marine Oil Co.'s No. 5 Justiss, 300 ft. N. 465 ft. W, SE cor., Lot 7, NW Sec. 18-18-17. Set 10¾-in. csg. 822 ft.; drlg. 3,072 ft.

Union County—Other

E. G. Bradham's No. 4-A H. C. McKinney, 306 ft. N, 660 ft. E, SW cor. SW SW Sec. 30-17-15, Hole 120° off; P.B. 2,150 ft.; hole 11° off; abd. and skdg. 20 ft. N to spud.

Crestrock Oil Co.'s No. 1 E. Riley, 330 ft. S, 250 ft. W, NE cor. NW SW Sec. 9-16-15. S.O. 2,370-80 ft. and 2,-390-2,400 ft.; 6-in. csg. 2,415 ft.; T.D 2,415 ft.; perf. 2;370-74 ft.; pmpd. est. 200 B.P.D.; small S.O.; pmpd. 300 B.F. in 8 hrs., 8% oil; W.O.

Delta Drlg. Co.'s No. 1 C. T. Grace, C SE SE Sec. 31-12-14. Set 10¾-in. csg. 815 ft.; drld. wtr. well.

Delta Drlg. Co.'s No. 1 W. D. Webb, C N½ NE SW Sec. 6-18-13. Drlg. 2,040 ft.

H. L. Halverson No. 1 Moore, C SE SE Sec. 1-17s-14w. S.D. 2,362 ft.; boiler rep.; reported S.O. 2,250 ft.

Lion Oil Ref. Co. No. 9-A Hays, Sec. 4 16-15. O.W.W.O.; O.T.D. 7,255 ft.; P.B 2,325 ft.; rpd. csg. 2,276-80 ft.; S.O.: pmpd. est. 700 B.P.D. S.W.; S.S.O.: arng. recmt. 2,325 ft.; W.O.C.

Jo-Mo Oil Corp.'s No. 1 Union Sawmill Co., 330 ft. N and W, SE cor. NE NE Sec. 24-17-14. Set 10-in. 74 ft.; T. Nach. 2,310 ft.; S.D.; W.O. 3,270 ft.

ARKANSAS

Clark County

Coker Oil Corp.'s No. 1 H. Cabe, 330 ft. NE cor. NW NE Sec. 3-10-21. M.I. rig.

W. S. King's No. 1 H. Ross, 640 ft. S. 359 ft. W, NE cor. S½ SW Sec. 3-10-21. S.D.; pmp. rep.; T.D., rd.&gr. sh. 1,500 ft.

W. P. Wilson's No. 1 Hamilton & Mathews, C W½ NE NE Sec. 31-10s-20w. Run 10-in. csg. 41 ft.; T. Nac. 358 ft.; S.S.O.; reported S.O.&G. 437 ft.; cg. 1,-130 ft.

Columbia County

Ark. Fuel Oil Co.'s No. 1 King, C SE SW Sec. 16-17-20. 9⅝-in. csg. 2,215 ft.; W.O.C.

Atlantic Ref. Co.'s No. 1-B L. Spain, S½ NW SW Sec. 18-17-19. Set 13⅜-in. csg. 200 ft.; W.O.C.

Lion Oil Ref. Co.'s No. 1 Warnock est., C NW NW Sec. 15-18-22. R.U.; W.O.

McAlester Fuel Co.'s No. 1 E. D. Harris et al, C SW NW Sec. 14-17-19. S.O. cuttings 4,590-4,600 ft.; T. por. L. 7,-377 ft.; set 6-in. csg. 7,407 ft.; T.D. 7,-408 ft.; W.O.C.

Normandie Oil Co.'s No. 2 Dees, C SE SE Sec. 24-17-20. Set whpstk. 5,300 ft.; drlg. gr. sh. 5,581 ft.

Southwood Oil Co.'s No. 1-C A. L. Poindexter, C N½ SW SE Sec. 23-17-20. Whpstkd. 4,758 ft.; drlg. gr. sh. 4,-853 ft.

Standard Oil No. 1 J. A. Foster, Sec. 19 17s-19w. Set 6-in. csg. 7,453 ft.; set 370 ft. of 4¾-in. at 7,594 ft.; set whpk. 4,340 ft. Drlg. sd.&sh. 5,280 ft.

Standard Oil Co. of La.'s No. 1 Gunnels, 660 ft. SW cor. SE NW Sec. 19-17-19. Drlg. anhy. 7,373 ft.

Standard Oil Co. of La.'s No. 1-B Gunnels, 571 ft. W, 585 ft. S, NE cor. NW SW Sec. 19-17-19. Drlg. sd.&sh. 374 ft.

Standard Oil Co. of La.'s No. 1 D. H. Lewis, C NW NE Sec. 19-17-19. Drlg. sd.&sh. 5,854 ft.

Standard Oil Co. of La.'s No. 1 Petty Stave, C SE SE Sec. 4-17-21. Loc.

Tide Water Seaboard's No. 1 Clark, C SE NE Sec. 16-18-19. Set 10¾-in. csg. 2,-514 ft.; drlg. 2,605 ft.

G. H. Vaughn and Deep Rock Oil Corp.'s No. 1 J. Jones unit, C SW NE Sec. 21-17-20. Set whpstk. 3,640 ft.; drlg. gr. sh. 4,296 ft.

Craighead County

Tennark, Inc., No. 1 R. M. Martin, SE cor. NE NE Sec. 35-14-3e. Drlg. sdy. L. 3,-462 ft.; T. sdy. L. 3,458 ft.; S.D., hd. L. 3,654 ft.; engine rep.

Faulkner County

Cato Oil Co., Inc.'s No. 1 R. R. Harrell, 330 ft. SE cor. SE SW Sec. 35-4n-12w. Set 10-in. csg. 210 ft.; 7-in. csg. 2,260 ft.; sd. 2,367-70 ft.; flwd. est. 40,000 cu. ft. gas daily; S.I.C.P. 50 lb.; T.D. 2,496 ft.; S.D.; hd. bl. limy sh.; est. 1,000 ft. wtr. in hole; S.I.; G.P. 50 lb.

ALABAMA

Barbour County

W. B. Hinton's No. 1 fee, Sec. 14-9n-26e. Drlg. sd.&sh. 5,100 ft.

Choctaw County

Joe Modisett et al's No. 1 McCorvey, SE cor., SW SW Sec. 20-9n-2w. S.D. 7,-520 ft.

Houston County

Columbia Oil Co.'s No. 1 State Ld., SE cor. NE NE Sec. 8-2n-29e. S.D. 2,150 ft.; Selma clk.

Lawrence County

Mid-Southern Pet. Co.'s No. 1 W. R. Jackson, 150 ft. NL, 500 ft. EL, Sec. 30-7-6. S.D. 570 ft., hd. L.

Washington County

Texon Drlg. Co.'s No. 1 Stallworth Naval Stores, Sec. 25-5n-4w. Spd.; set 12-in. csg. 147 ft.; W.O.C.

FLORIDA

Baker County

Swift Creek Oil Co.'s No. 1 Howell Turpentine Co., approx. C Sec. 15-4s-19e. Drk.

Dade County

Wm. G. Blanchard et al's No. 1 Everglades, 200 ft. E, 100 ft. N, SE cor. Sec. 31-53s-35e. Loc.

Levy County

Florida Oil Discovery Co.'s No. 2 Cedar Key, SW SW NE Sec. 9-15s-13e. T.D. 5,266 ft.; W.O. heavier rig.

Florida Oil Discovery No. 2 Cedar Key Co., Sec. 9-15s-13e. 10-in. csg. 3,986 ft.; drlg. sh. 5,158 ft.

Nassau County

St. Mary's River Oil Corp.'s No. 1 Hillard Turpentine Co., NW cor. NW SE Sec. 19-4n-24e. S.D. 4,762 ft., sd.

St. Mary Oil Corp. No. 1 Hillard, Sec. 19-4n-24e. Set 6⅝-in. csg. 3,935 ft.; drlg. sd. 4,762 ft.

Suwannee County

Wm. G. Blanchard et al's No. 1 Lucy Cotton, 774 ft. N, 153 ft. W, SE cor. NE Sec. 35-3s-11e. S.D. 184 ft.

J. W. Phillips Oil Explrtn. Co.'s No. 1 Shilkett, NW NW Sec. 14-4s-14e. Drlg. 368 ft.

GEORGIA

Clinch County

Georgia Resources, Inc.'s No. 1 Gillican, Dist. 4. S.D. 400 ft., gr. sh.

MISSISSIPPI

Claiborne County

Claiborne Co. Dev. Co. No. 1 Ruth Hayden, S½ SE Sec. 55-11n-2e. O.W.WO.; O.T.D. 2,949 ft.; S.D. 3,272 ft., sh.

Copiah County

Triangle Drlg. Co.'s No. 1 W. W. Broome, 153 ft. SW cor. SW SE Sec. 1-10n-8e. T.D. 10 ft.; spd.; S.D.; W.O. heavy rig.

Harrison County

Big Ridge Oil Co.'s No. 1 Hengin, C NE Sec. 13-7s-10w. S.D. 2,700 ft.

Hinds County

Love Pet. Co.'s No. 1 Kennington Inv. Co., 82 ft. E, 120 ft. N, SW cor. Lot 19, Kenwood subd. Part 2, Sec. 35-6n-1e. R.U.

G. Jefferies' No. 1 Gaddis-McLaurin, 150 ft. E, 274 ft. S, NW cor. SW Sec. 17-7n-2w. Spd. in.

Itawamba County

G. C. Grasty et al's No. 1 Ky. Lbr. Co., 1,320 ft. E, 660 ft. S, C Sec. 7-10s-10e. R.U.

Kemper County

M. R. Crabb et al's No. 1 W. T. Caldwell, NW SE Sec. 25-9n-15w. 10¾-in. csg. 86 ft.; S.D. 1,200 ft.

Lafayette County

Adam O. & G. Co. No. 1 Z. E. Lewellen, 990 ft. WL, 330 ft. NL, NE NW NW Sec. 9-10s-1w. Drlg. sd.&rd. sh.&L. 3,-722 ft.

Lamar County

South Miss. Pet. Corp.'s No. 1 Pearly Morris, 500 ft. S, 570 ft. E, C Sec. 4-2n-14w. S.D. 3,029 ft.

Pike County

S. R. Crouch's No. 1 Cupit, 360 ft. N, 660 ft. W, SE cor. NE SW Sec. 25-2n-7e. S.D. 864 ft.

Prentiss County

Home Dev. Co.'s No. 1 Mrs. A. Allen, Sec. 8-7s-9e. Drlg. dolo. 1,173 ft.

Simpson County

Cleve Love No. 1 N. E. Gardner, SW cor. SW NE Sec. 1-10n-17w. S.D. 3,150 ft., Wlx.

Yasco County

O'Brien Bros. et al's No. 1 Jennie Stevens, C SW NE Sec. 13-10n-3w. Spd.

Union Prod. Co.'s No. 1 S. E. Perry et al, C NW NW Sec. 24-10-3. Drlg. 3,-530 ft.

Union Prod. Co.'s No. 1 Stevens, C NW NW Sec. 13-10-3. Drlg. 3,485 ft.

LOUISIANA

N. LOUISIANA WILDCATS

Bossier Parish

Gulf Ref. Co.'s No. 20 C. B. Hodges, 3,131 ft. N, 1,388 ft. W, SE cor. Sec. 24-16-12. Cd. ool. L. 4,411-23 ft. S.G. and dist.; tried to blow out; D.S.T. 4,400-25 ft.; rec. 4,000,000 cu. ft. gas and spray S.W. and some heavy oil in 20 min.; cmtd. off bttm. of hole 4,430 ft.; drlg. sh.&L. 5,011 ft.

J. B. Stovall's No. 3 Gayoso, 1,145 ft. N, 68 ft. E, SW cor. Sec. 14-19-11. Drlg. 360 ft.

Caddo Parish

R. E. Allison's No. 3 Ellerbe et al, 330 ft. N, 1,980 ft. E, SW cor. Sec. 27-18-14. R.U.

Ark. La. Gas Co.'s No. 1 Bell, 1,213 ft. N, 1,067 ft. E, SW cor. Sec. 6-17-16. Set 9⅝-in. csg. 3,246 ft.; W.O.C.

J. W. Bailey's No. 1 Winston, 592 ft. N, 150 ft. E, SW cor. NW Sec. 8-20-15. Set 10-in. csg. 110 ft.; 6-in. csg. 1,344 ft.; drlg. 1,585 ft.

Burnham Drlg. Co.'s No. 1 Wilkinson, 1,650 ft. N, 990 ft. W, SE cor. Sec. 33-22-16. Set 10-in. csg. 105 ft.

Burton & Harlan's No. 1 Thompson, 495 ft. S, 261 ft. E, C Sec. 1-20-16. Drlg. 50 ft.

David Crawford et al's No. 1 Lloyd, 3,940 ft. N, 1,000 ft. E, SW cor. Sec. 29-17-13. M.I.M.

L. I. Davis' No. 1 Williams, C NW NW Sec. 14-15-15. R.U.

F. & H. Oil Co.'s No. 1 Pitts, 990 ft. N, 330 ft. E, SW cor. NE Sec. 18-21-15. Set 7-in. csg. 1,530 ft.; tstg. 1,752 ft.

R. L. Hall's No. 2 Caddo Lv. Bd., 585 ft. S, 1,245 ft. E, C Sec. 26-21-16. Set 8-in. csg. 938 ft.; T.D. 942 ft.; tstg.

A. R. Hancock's No. 1 Standard Oil Co. fee, 330 ft. NW cor. SW Sec. 17-21-15. Set 7-in. csg. 1,527 ft.; T.D. 1,777 ft.; W.O.S.R.

V. A. Hardin's No. 1 Glassell-Means, 660 ft. S, 609 ft. E, NW cor. Sec. 9-23-15. Drlg. anhy. 5,745 ft.

Jones Oil Co.'s No. 1 Pitts, 250 ft. S, 674 ft. W, NE cor. Sec. 24-20-16. Tstd. dry 1,679 ft., S.O.; will acd.

C. H. Lyons et al's No. 1 Rosenblath, 725 ft. N, 1,270 ft. E, C Sec. 35-18-14. R.U.

McDonald Oil Co.'s No. 1 G. W. Thacker, 324 ft. S, 347 ft. E, C Sec. 1-20-16. Arng. test 1,569 ft.

J. F. Mechen's No. 1 Crystal, 990 ft. S, 900 ft. W, NE cor. Sec. 14-21-16. S.D. 1,550 ft.

J. Ray Murray et al's No. 1 Standard Oil Co. fee, 330 ft. N, 200 ft. E, SW cor. Sec. 12-21-16. Set 7-in. csg. 1,500 ft.; acd. with 1,000 gal. at 1,720 ft.; S.O.; drlg. 1,823 ft.

J. S. Pate's No. 1 J. B. Files, 330 ft. N, 332 ft. W, SE cor. Sec. 7-21-15. 6⅝-in. csg. 1,530 ft.; arng. test 1,753 ft.

Seymour Oil Co. No. 1 Hughes et al, 330 ft. NE cor. NW Sec. 15-20-15. W.O. S.R.; set 6-in. csg. 2,190 ft.; T.D. 2,206 ft.

Stanolind O. & G. Co. No. 1, 131 Dillon hrs., C SE NE Sec. 14-21-15. Drlg. sh. 8,809 ft.

Joe G. Strahan's No. 2-A Hart, 1,300 ft. N, 990 ft. E, SW cor. Sec. 29-21-16. R.U.

Joe G. Strahan's No. 2 Stiles, 1,958 ft. N, 250 ft. E, SW cor. Sec. 29-21-16. Drlg. sh. 1,684 ft.

Temple Oil Co.'s No. 1 Bostwick, 990 ft. N, 330 ft. W, SE cor. SW Sec. 13-22-16. R.U.

Texas Co.'s No. 18-B Noel, 330 ft. NW cor. Sec. 14-21-15. Set 6⅝-in. csg. 1,523 ft.; T.D. 1,723 ft.; W.O.S.R.

Waldron & Barnes' No. 2 Ark. Fuel Oil Co., 483 ft. N, 630 ft. E, SW cor. NW SE Sec. 1-20-16. Drlg. sd. 1,206 ft.

Caldwell Parish

Critchett & Woods (formerly E. T. Oakes) No. 1 Kyles, NE cor. SW NE Sec. 18-11-3e. S.D. 4,120 ft.

Catahoula Parish

Bell Drlg. Co. No. 1 Peck, C SW NE Sec. 33-11n-8e. Set 41 ft. 15½-in. csg.; 50 ft.; W.O.C.

Claiborne Parish

Lisbon Expltn. Co. No. 1 Roberta Vaughn, 330 ft. N, 660 ft. E, SW cor. NW NE Sec. 36-21-5. O.W.D.D.; O.T.D. 5,313 ft.; recmtd. 7-in. csg. 5,343 ft.; T. Tr. Pk. 5,405 ft.; drlg. sh. 7,960 ft.

Maritsky & Bibby's No. 4 McClung, Sec 29-21-7. Tstd. small S.O.; W.O. 1,476 ft.

De Soto Parish

Murray Davis' No. 1 Russell, 50 ft. N, 500 ft. W, SE cor. NE NW Sec. 12-11-16; O.W.D.D.; O.T.D. 2,046 ft.; T.D. 2,515 ft.; tstd. S.W.; P.B. 1,700 ft.; tstd. small S.G.; T.D. 2,736 ft.; reported 4-ft. oil sd.; S.D.

N. W. Hunter's No. 1 Anders-LeBlanc, C NW SE Sec. 5-11-14. R.U.

Roonth & Genecov Prod. Co. No. 1 Woolums, 990 ft. S, 330 ft. E NW cor. SW¼ Sec. 29-12-12. T. Nac. sd. 1,038 ft.; reported S.O. 1,038-64 ft.; P.B. 1,048 ft.; 7-in. 1,038 ft.; tstd. dry; S.D.; W.O. 1,064 ft.

C. H. Tuttle No. 2-A Wemple, E NW cor. SW¼ Sec. 14-12n-11w. T. bkn. sd. 2,640 ft.; 6⅝-in. csg. 2,557 ft.; T.D. 2,608 ft.; tstd. dry; W.O.

Watts Oil & Gas Co. No. 1 Frank Grocery Co., 338 ft. S, 450 ft. W NE cor., NW Sec. 35-12-11. S.D. 1,300 ft.

Grant Parish

Arrow Drlg. Co.'s No. 1 Maxwell, 330 ft. S, 810 ft. W, C Sec. 9-9-1e. T. sd. 1,534 ft.; 6-in. csg. 1,530 ft.; W.O.C.; T.D. 1,537 ft.; tstg.

La Salle Parish

Peterson Pet. Co.'s No. 1 Tinsley, C NE SW Sec. 36-9n-2e. Set 10-in. csg. 100 ft.; drlg. sh. 465 ft.

Smith Bros.' No. 1 Kenney, 660 ft. S, 150 ft. W, C Sec. 7-10-2e. T.D. 1,510 ft.; S.D.; wtr.

Morehouse Parish

Southern Carbon Co.'s No. 26 Tensas, Sec. 2-21-4e. R.U.

Union Prod. Co. No. 1-A Tensas-Delta, 1,894 ft. W, 1,584 ft. S, NE cor. SE Sec. 8-22-4. Set 20-in. csg. 125 ft.; 16-in. csg. 712 ft.; set 10¾-in. csg. 2,448 ft.; drlg. 7,321 ft.

United Carbon Co.'s No. 2 Tulsa Plant fee, Sec. 4-21-5e. Drlg. 1,990 ft.

Natchitoches Parish

Jack Lent et al's No. 1 Walker, C NE NE Sec. 9-10-10. 10-in. csg. 63 ft.; drlg. sh. 1,400 ft.

Popkins & DeSoto Bros.' No. 1 Peavy-Wilson Lbr. Co., 330 ft. NW cor. SE NW Sec. 36-7n-9w. O.W.W.O.; O.T.D. 500 ft.; cg. 2,560 ft.

Sabine Parish

A. R. Chestnut et al's No. 1 Sepulvedo, 990 ft. N, 330 ft. E, SW cor. Sec. 4-7-13. 10-in. csg. 60 ft.; W.O.C.

M. Lanza's No. 1 Phares, 330 ft. SE cor. NE SE Sec. 5-5-12. R.U.

Major Oil Co. No. 7 Bowman Hicks, 330 ft. NW cor. NE SE Sec. 11-7-13. T. clk. 2,139 ft.; set 7-in. csg. 2,143 ft.; treated with 1,500 gal. acd. at 2,420 ft.; S.O.; reacd.; 2,500 gal.; tstd. 5 B.P.D., oil; cd. S.W. sd. 2,571 ft.; T.D. 2,572 ft.; W.O.

Oglesby & Baird's No. 1 Sabine Lbr. Co., SW cor. SW SE Sec. 5-7-13. T. clk. 2,-140 ft.; rng. csg.; T.D. 2,140 ft.

Okla.-Texas Tr.'s No. 3 Frost Lbr. Co., NE cor. NE SW Sec. 22-9-13. Sd.; S.O. 2,027-29 ft.; tstd. small S.O.; set 6⅝-in. csg. 3,031 ft.; tstd. S.G. 3,031 ft.; drld. to 3,046 ft.; blew out and flwg. gas at intervals; will S.I. and acdz.

K. R. Phillips' No. 1 Craig, 335 ft. S, 330 ft. E, NW cor. NW SE Sec. 22-9-13. D.D.; arng. test; T.D. 1,935 ft.

W. L. Posey No. 1 Rivers, C NW NW Sec. 26-8-13. 6-in. csg. 2,147 ft.; T.D. 2,150 ft.; T. clk. 2,145 ft.; set 6-in. 2,-147 ft.; W.O.C.

W. M. Quick No. 1 Sabine, SE cor. NE SE Sec. 8-7-13. 6-in. csg. 2,061 ft.; T. D. 3,547 ft.; P.B. 2,350 ft.; tstg. small S.O.&wtr.

H. M. Sneed No. 1 Leone, SW cor. NW SE Sec. 8-7-13. T.D. 1,962 ft.; 6-in. csg. 2,061 ft.; W.O.S.R.; T.D. 2,116 ft.

S. E. Stack's No. 1 Gray, 330 ft. SW cor. Sec. 4-7-13. T. clk. 2,025 ft.; set 7-in. csg. 2,028 ft.; W.O. wtr.

J. E. Stack's No. 1 Weber, 330 ft. SE cor. SW NE Sec. 8-7-13. R.U.

Union Parish

W. E. Hope G. & O. Co.'s No. 5 Frost Lbr. Ind., Sec. 26-22-3. Set 6-in. csg. 2,108 ft.; W.O.C.

Memphis Nat. Gas Co.'s No. 1 Frost Lbr. Ind., Sec. 14-22-3e. Set 8⅝-in. csg. 787 ft.; W.O.C.

Nemours Corp.'s No. 4 Haile, Sec. 1-21-3e. Set 6-in. csg. 2,096 ft.; W.O.C.

Webster Parish

Geo. B. Barham's No. 1 Bodcaw Lbr. Co., 627 ft. N, 710 ft. E, SW cor. SE Sec. 15-21-10. O.W.D.D.; O.T.D. 4,683 ft.; Hllwy. sd. 5,828-39 ft.; oil; arng. set 5-in. csg.; T.D. 5,860 ft.

Hunt Oil Co. No. 1 Glass et al, C SE NW Sec. 30-21-9. Set 9⅝-in. csg. 5,665 ft.; D sd. 8,469-83 ft. (oil); Bdcw. sd. 8,562-8,602 ft. (bttm. 8 ft. oil); Davis sd. 8,853-59 ft. (gas); T. G sd. 8,951 ft.; tight and shly.; T.D. 9,043 ft.

Midstates Oil Corp.'s No. 1 W. L. Coyle, 100 ft. NW, C NE SE Sec. 20-21-10. Drlg. sh. 7,975 ft.

Oliphant Oil Co.'s No. 2 Banks, 410 ft. S, 660 ft. E, NW cor. Sec. 2-20-10. Drlg. sh.&L. 3,850 ft.

Stanolind O. & G. Co. No. 3 Pardee, C SW SE Sec. 35-21-10. T. Cot. Val. 8,030 ft.; D sd. 8,449-73 ft. (oil); Bdcw. sd. 8,542-83 ft. (gas) and 8,591-8,603 ft., tight and dry; set 7-in. csg. 8,600 ft.; T.D. 8,606 ft.; rng. tbg.

Stanolind O. & G. Co.'s No. 4 Pardee, 660 ft. SE cor. Sec. 25-21-10. T. Tr. Pk. 5,829 ft.; 9⅝-in. csg. 5,950 ft.; drlg. 5,829 ft.; 9⅝-in. csg. 5,950 ft.; 9⅝-in. csg. 5,863 ft.; drlg. plug 5,950 ft.

Woodley Pet. Co.'s No. 2 Couch, 810 ft. S, 510 ft. W, NE cor. SW Sec. 35-21-10. 13⅜-in. csg. 683 ft.; fsg. 5,576 ft.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co. No. 3 Brookshire. Sec. 66-12s-3e. Drlg. sh. 7,020 ft.

Continental Oil Co. No. 1 David Meaux, Sec. 9-12s-3e. T.D. 11,359 ft.; T. gas sd. 11,318 ft.; D.S. stk.; fsg.

Continental Oil Co. No. 1 Francioi, Sec. 67-12s-3e. Drlg.

Bancroft—Beauregard Parish

Republic Prod. Co.'s No. 9 Columbia Ld. & Tmbr. Co., Sec. 15-6s-13w. T.D. 7,330 ft.

Republic Prod. Co.'s No. 11 Columbia Ld. & Tmbr. Co., Sec. 16-16s-13w. Drlg. sh. 4,633 ft.

Republic Prod. Co. No. 9 Lutcher Moore, Sec. 15-16s-13w. T.D. 11,018 ft.; 5½-in. csg. 11,018 ft.; perf. csg. 10,375-85 ft.; tstd. S.W.; sqzd. perf.; W.O.C.

Bateman Lake—St. Mary Parish

Texas Co. No. 1 St. Mary Parish Sch. Bd., Sec. 16-16s-12e. Drlg. sh.&L. 10,807 ft.

Texas Co. No. 2 State-Bateman Lake, Sec. 21-16s-12e. 7⅝-in. csg. 10,985 ft.; T.D. 11,609 ft.; perf. csg. 10,822-45 ft.; tstd. gas; sqzd.; perf. csg. 10,702-27 ft.; tstd. gas; reperf. csg. 10,475-95 ft.; tstd. gas-cut mud; perf. csg. 9,580-94 ft.; showed gas; reperf. csg. 9,675-85 ft. tstg.

Baton Rouge—East Baton Rouge Parish

W. V. Bowles' No. 2 Richard Community, Sec. 45-7s-1e. Drlg. sd. 550 ft.

W. V. Bowles' No. 2 University Hills, Sec. 68-7s-1w. Loc.

W. V. Bowles' No. 3, University Hills subd., Sec. 68-7s-1w. Loc.

M. T. Grubb et al's No. 2 College Town Sec., Lot 18, Blk. 2. Loc.

Guaranty Oil Co. No. 2 Morgan, Sec. 65-7s-1w, T.D. 6,530 ft.; 5½-in. csg. 6,450 ft.; swbd. S.W.; S.D.

Wm. Helis' No. 2-B Duplantier, Sec. 68-7s-1w. T.D. 6,502 ft.; 7-in. csg. 6,485 ft.; I.P. 375 B.P.D.; ¼-in. ck.

Wm. Helis' No. 6-A Duplantier, Sec. 65-7s-1w. T.D. 6,460 ft.; T. sd. 6,455 ft.

Wm. Helis' No. 1 L.S.U., Sec. 67-7s-1w. Drlg. sh. 5,048 ft.

Wm. Helis' No. 5-A L.S.U., Sec. 67-7s-1w. Loc.

Wm. Helis' No. 3 Masteriste, Sec. 66-7s-1w. T.D. 6,475 ft.; 7-in. csg. 6,466 ft.

Wm. Helis' No. 2 Williams, Sec. 66-7s-1w. 6,479 ft.; 7-in. csg. 6,462 ft.

J. Edw. Jones' No. 1 Nichols Community, Sec. 45-7s-1e. T.D. 6,513 ft.; 5½-in. csg. 6,513 ft.; perf. csg. 6,511-13 ft.; I.P. 69 B.P.D.; ¼-in. ck.

T. G. Markley et al No. 3 Knox, Amis-Farnbacher, Sec. 66-7s-1w. Loc.

T. G. Markley et al's No. 5 Knox-Amis-Farnbacher, Sec. 66-7s-1w. T.D. 6,482 ft.; 7-in. csg. 6,474 ft.; I.P. 210 B.P.D.; 9/64-in. ck.

T. G. Markley et al's No. 7 Knox et al, Sec. 66-7s-1w. Drlg. sd.&sh. 2,880 ft.

Marshland Oil Co.'s No. 1 J. B. McDonald, Sec. 45-7s-1e. Loc.

Sugarfield Oil Co.'s No. 2 Irby Nichols, Sec. 45-7s-1e. Drlg. 750 ft.

Texas Canadian Oil Co.'s No. 2 Bogan-Davidson, Sec. 67-7s-1w. Loc.

Bay St. Elaine—Terrebonne Parish

Texas Co. No. 19 State-Bay St. Elaine, Sec. 18-22s-18e. T.D. 6,500 ft.; 9⅝-in. csg. 6,400 ft.; T.D. 7,028 ft.; 7-in. csg. 7,028 ft.; perf. csg. 6,440-6,500 ft. tbg. plugged up; washing out.

Texas Co.'s No. 59 State, Sec. 19-23s-20e. Drlg. sdy. sh.&L. 5,236 ft.

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Bayou Choctaw—Iberville Parish

Standard Oil Co. (La.) No. 11 Wilbert, Sec. 53-9s-11e. T. salt 718 ft.; cg. cap rk. 4,781 ft.

Bayou des Glaise—Iberville Parish

Humble O. & R. Co. No. 1-B Wilbert, Sec. 78-8s-8e. T.D. 3,025 ft.; 13⅜-in. csg. 3,000 ft.; T. salt 4,101 ft.; T.D. 4,182 ft.; S.D.

Humble O. & R. Co.'s No. 2-B Wilberts, Sec. 78-8s-8e. Loc.

Black Bayou—Cameron Parish

Earth Pet. Co. No. 2 R. A. Moore, Sec. 18-12s-12w. S.D. 8,332 ft.

Caillou Island—Terrebonne Parish

Texas Co. No. 29 State, Sec. 17-23s-20e. Rig.

Cameron Meadows—Cameron

Magnolia Pet. Co. No. 25 Cameron Meadows, Sec. 21-14s-13e. Drlg. sh. 6,912 ft.

Chacahoula—La Fourche Parish

Sun Oil Co. No. 1 Cypress, Sec. 75-15s-15e. 13⅜-in. csg. 1,842 ft.; T. salt 6,072 ft.; T.D. 6,088 ft.; P.B. 2,100 ft.; sdtrkd.; drlg. sh.&L. 5,773 ft.

Sun Oil Co. No. 2 Dodge Sunberry, Sec. 65-15s-15e. S.D. 4,259 ft.; T.A.

Chalkley Field—Cameron Parish

Humble O. & R. Co.'s No. 5 K. B. Hanzen, Sec. 9-12s-6w. Drk.

Humble O. & R. Co. No. 4 Sweet Lake Ld. & O. Co., Sec. 7-12s-6w. T.D. 8,448 ft.; P.B. 7,508 ft.; sdtrkd.; T.D. 8,462 ft.; fsg.

Shell Oil Co., Inc., No. 3 Hanzen, Sec. 21-12s-6w. 10¾-in. csg. 2,752 ft.; cg. oil sd. 8,818 ft.; T.S. 8,815 ft.; T.D. 9,300 ft.; 5-in. csg. 9,299 ft.; P.B. 8,925 ft.; perf. csg. 8,883-8,915 ft.; P.B. 8,880 ft.; fsg.

Charenton—St. Mary Parish

Commerce Oil Co.'s No. 3 Parro, Sec. 31-13s-10e. T.D. 6,695 ft.; perf. csg. 6,457-62 ft. and 6,478-83 ft.; made sqze. job.

H. J. DeArman et al's No. 2 Alleman, Sec. 21-13s-9e. Loc.

H. J. DeArman's No. 3 Alleman, Sec. 21-13s-9e. Loc.

Fifteen Oil Co. No. 2 State, Sec. 31-13s-10e. T.D. 7,943 ft.; 7-in. csg. 7,200 ft.; perf. csg. 5,895-5,900 ft.; flwd. oil and S.W.

Knisley Oils, Inc.'s No. 1 Hertel, Sec. 21-13s-9e. T.D. 1,806 ft.; P.B. 1,150 ft.; W.O.C.

Knisley Oil, Inc.'s No. 6 Le Blanc, Sec. 21-13s-9e. T.D. 1,798 ft.; 7-in. csg. 1,776 ft.; comp.; no ga.

Pan American Prod. Co.'s No. 17 Laws Realty Co., Sec. 31-13s-10e. Drk.

Pan American Prod. Co.'s No. 6 South Coast Corp., Sec. 31-13s-10e. Drk.

Cheneyville—Rapides Parish

Amerada Pet. Corp.'s No. 6 Well, Sec. 54-1s-2e. Drlg. sh. 5,036 ft.

Gulf Oil Corp.'s 1-A C. J. Pope, Sec. 56-1s-2e. Drlg. sh. 5,010 ft.

S. W. Richardson's No. 3 Well, Sec. 54-1s-2e. T.D. 5,817 ft.; ran 5½-in. csg.; comp.; no ga.

Convent—St. James Parish

Continental Oil Co.'s No. 2 Realty. P.B. T.D. 8,045 ft.; P.B. 6,342 ft.; tstg.; flwg. gas and dist.

Creole—Cameron Parish

Superior Oil Co.'s No. 8 State, Twp. 15s-8w. Perf. csg. 6,750-52 ft.

LEGAL

Department of the Interior, United States Land Office, Santa Fe, New Mexico. Notice is hereby given that leases of the oil and gas deposits in the following lands in the Fulger Basin gas field, undefined, New Mexico, are offered to the responsible qualified bidder of the highest bonus per acre, pursuant to the provisions of section 17 of the leasing act of February 25, 1920 (41 Stat. 437) as amended, at the royalty rate scale in the lease form shown in circular 1386, at a sale to be held in the office of the Register of the district land office at Santa Fe, New Mexico, at 10:00 o'clock on October 26, 1939: Unit No. 1, SE¼ SW¼ Sec. 10, W½ SW¼, SE¼ Sec. 15, T. 29 N., R. 12 W., N.M.P.M., 280 acres, and Unit No. 2, N½ and N½ S½ Sec. 22, T. 29 N., R. 12 W., N.M.P.M., 480 acres. The units may be consolidated in a single lease to the same qualified bidder. The successful bidder must deposit on the day of the sale a certified check on a solvent bank, or cash, for one-fifth of the amount of each bid, and file a showing of qualifications to receive the lease required by section 17 of General Land Office circular 1386. The remaining four-fifths, together with the annual rental in advance at the rate of $1 per acre, must be paid and a $5000 corporate surety bond must be furnished prior to the issuance of the leases. The bidders are warned against violation of the provisions of section 59 of the United States Criminal Code approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Register.

Darrow—Ascension Parish

Humble O. & R. Co.'s No. 25 Community, Sec. 31-10s-2e. Loc.

Humble O. & R. Co.'s No. 16 Gumbel, Sec. 36-10s-2e. T.D. 8,255 ft., sd.&sdy. sh.; S.O. 8,205-55 ft.

Kiva Oil Co. No. 1 Duplessis, Sec. 69-10s-2w. S.D. 2,523 ft.

Dog Lake—Terrebonne Parish

Texas Co. No. 23 State, Sec. 5-22s-16e. T.D. 7,429 ft.; P.B.; sdtrkd.; drlg. sh. 6,105 ft.

Eola—Avoyelles Parish

Amerada Pet. Corp.'s No. 2 Glaze, Sec. 6-2s-3e. T.D. 8,559 ft.; 5½-in. csg. 8,558 ft.

Amerada Pet. Corp.'s No. 3 Glaze, Sec. 6-2s-3e. Drlg. sh. 2,793 ft.

Amerada Pet. Corp.'s No. 3 Irion, Sec. 6-2s-3e. Loc.

Amerada Pet. Corp.'s No. 5 C. B. Marchive, Sec. 6-2s-3e. Drlg. sh. 8,312 ft.

Amerada Pet. Corp.'s No. 6 Marchive, Sec. 6-2s-3e. Drlg. sh. 7,236 ft.

Amerada Pet. Corp.'s No. 1 White et al, Sec. 7-2s-3e. Loc.

Amerada Pet. Corp.'s No. 3 R. L. Whitlow, Sec. 6-2s-3e. Loc.

Amerada Pet. Corp.'s No. 4 Whitlow, Sec. 1-2s-2e. Loc.

Amerada Pet. Corp. No. 1 Merchants & Planters Bnk., Sec. 41-1s-3e. Loc.

Gulf Expln. Co. No. 5 Samuel Haas Est., Sec. 8-2s-3e. T.D. 8,584 ft.; 5½-in. csg. 8,584 ft.; perf. csg. 8,565-70 ft.; flwd. oil; went dead; S.D.

G. W. Kennedy et al's No. 1 R. R. Irion, Sec. 1-2s-2e. Loc.

Geo. Lilly et al No. 1 Dent, Sec. 1-2s-2e. Drlg. sh.&L. 8,001 ft.

Sid Richardson No. 3 State-Bayou Bouef, Sec. 6-2s-3e. Drlg. sh. 8,236 ft.

S. W. Richardson's No. 1-A Haas, Sec. 11-2s-2e. Loc.

S. W. Richardson's No. 6 Haas Inv. Co., Sec. 7-2s-3e. Cg. 8,450 ft.

Fausse Point—Iberia Parish

Texas Co. No. 6 State, Twp. 11s-8e. R.U.

Garden Island—Plaquemines Parish

Texas Co. No. 36 State, Sec. 38-23s-33e. T.D. 5,247 ft., salt; 7-in. csg. 4,754 ft. perf. csg. 4,570-4,635 ft.; I.P. 140 B.P.D.; ⅛-in. ck.

Texas Co.'s No. 37 State, Garden Island, Sec. 38-23s-33e. Drlg. sh. 1,166 ft.

Golden Meadows—La Fourche Parish

F. W. Bennett O. & R. Co.'s No. 1 Justillien Orgeron, Sec. 12-19s-22e. Cd. oil sd. 5,157-5,200 ft.; T.D. 5,675 ft.; 7-in. csg. 5,560 ft.; P.B. 5,476 ft.; sdtrkd.; T.D. 5,675 ft.; perf. csg. 5,167-75 ft.; I.P. 146 B.P.D.; 11/64-in. ck.

Berkshire Oil Co.'s No. 3 J. Nicol, Sec. 2-19s-22e. 7-in. csg. 5,370 ft.; T.D. 5,750 ft.; perf. csg. 5,304-11 ft.; I.P. 2,648 B.P.D.; ¼-in. ck.

Berkshire Oil Co.'s No. 4 Nichol, Sec. 9-19s-22e. Drlg. sh. 2,546 ft.

Brown & Wood's No. 1 J. Pitre, Sec. 9-19s-22e. T.D. 2,730 ft.; 5½-in. csg. 2,726 ft.

Taylor Fithian's No. 1 Mrs. Jacking Lambag, Sec. 2-19s-22e. Abd.

Taylor Fithian's No. 1 Edw. J. Parra, Sec. 12-19s-22e. 7-in. csg. 5,507 ft.; perf. csg. 5,168-82 ft.; I.P. 230 B.P.D.; ⅛-in. ck.

Golden Meadows Oil Co.'s No. 1 Collins Unit, Sec. 12-19s-22e. T.D. 5,630 ft.; 5½-in. csg. 5,517 ft.; I.P. 413 B.P.D.; ⅛-in. ck.

Wm. Helis' No. 1 Gaspard & Regan, Sec. 9-19s-22e. Drk.

Wm. Helis' No. 1 Gaspard & Rizau, Sec. 9-19s-22e. T.D. 7,925 ft.; 7-in. csg. 7,930 ft.

M. H. Marr et al's No. 2 Adam Terrebonne, Sec. 9-19s-22e. Loc.

M. H. Marr and R. A. Bristol No. 1 Church property, Sec. 2-19s-22e. T.D. 7,724 ft.; sdtrkd.; T.D. 9,007 ft.; P.B. and sdtrkd.; T.D. 2,852 ft.; T. sd. 2,647 ft.; 7-in. csg. 2,647 ft.; tstd. S.W. and oil; P.B. 2,000 ft.; sdtrkd.; T.D. 2,666 ft.; T.S. 2,648 ft.; flwd. oil and S.W.; perf. csg. 2,647-64 ft.; flwd. gas and S.W.; went dead; S.D.

M. H. Marr & G. H. Vaughn No. 1 Adam Terrebonne, Sec. 9-19s-22e. Drlg. sdy. sh. 8,823 ft.

Martex Oil Co.'s No. 1 Rebstock, Sec. 2-19s-22e. Loc.

St. Mary Oil Co.'s No. 1 Choust, Sec. 12-19s-22e. Drk.

St. Mary Oil Co.'s No. 2 Choust, Sec. 12-19s-22e. T.D. 5,282 ft.; P.B. 5,208 ft.

Texas Co.'s No. 2 Falgout Holding Co., Sec. 9-19s-22e. Drlg. sh.&L. 5,908 ft.

Texas Co.'s No. 3 Falgout Holding Co., Sec. 9-19s-22e. Drlg. sd.&sh. 2,016 ft.

Texas Co.'s No. 3 L.L.&E., Golden Meadows, Sec. 78-19s-21e. T.D. 7,940 ft.; 7-in. csg. 7,928 ft.; I.P. 460 B.P.D.; ⅛-in. ck.

Texas Co. No. 3 State-Catfish Lake, Sec. 76-19s-21e. T.D. 3,509 ft.; 7-in. csg. 2,805 ft.; perf. csg. 2,740-62 ft.; W.O. S.R.

Texas Co. No. 1 Theriot, Sec. 12-19s-21e. Drlg. sdy. sh.&sd. 10,037 ft.

Grand Bay—Plaquemines Parish

Gulf Oil Corp.'s No. 5-A Grand Prairie, Sec. 31-19s-19e. T.D. 1,802 ft.; run sur. csg.

Gulf Oil Corp. No. 6-A Grand Prairie Lv. Dist., Sec. 17-20s-10e. T.D. 9,380 ft.; fsg.

Gulf Oil Corp.'s No. 7-A Grand Prairie Lv. Dist., Sec. 5-20s-19e. Loc.

Gulf Oil Corp.'s No. 8-A Grand Prairie Dist., Sec. 5-20s-19e. Loc.

Gulf Ref. Co. No. 3 State QQ, Sec. 31-19s-19e. T.D. 8,131 ft.; 9⅝-in. csg. 8,112 ft.; I.P. 768 B.P.D.; ⅛-in. ck.

Gulf Oil Corp.'s No. 4 State, Sec. 20-19s-19e. Loc.

Texas Co. No. 1 State-Lookout Pass, Sec. 48-20s-18e. Loc.

Grand Lake—Cameron Parish

Amerada Pet. Corp. No. 1 Mallard Bay State, Sec. 12-13s-4w. T.D. 9,661 ft.; 5½-in. csg. 8,579 ft.; gas sd. 8,300 ft.; O.S. 8,385-8,415 ft.

Superior Oil Co.'s No. 3 State. Drlg. sh. 5,680 ft.

Hackberry—Cameron Parish

Stanolind O. & G. Co.'s No. 1 Benson-Vincent, Sec. 29-12s-10w. T.D. 3,360 ft.; abd.

Gulf Oil Corp. No. 25-A Erwin, Sec. 19-12s-10w. Drk.

Stanolind O. & G. Co.'s No. 20 Cameron Parish Sch. Ld., Sec. 16-12s-10w. Loc.

Stanolind O. & G. Co.'s No. 29-A Gulf Ld., Sec. 14-12s-10w. Loc.

Superior Oil Co.'s No. 7 Benson Vincent, Sec. 30-12s-10w. Drk.

Texas Co. No. 27-B State, 623 ft. S, and 5,142 ft. E of SE cor. Sec. 12-12s-10e in Twp. 12s-9w. T.D. 7,843 ft., salt; T. salt 7,839 ft.; P.B. 6,500 ft.; sdtkd.; drlg. sh. 6,715 ft.

Union Sulphur Co.'s No. 1 Simon Doiron, Sec. 37-12s-10w. Drlg. sh. 2,410 ft.

Horseshoe Bayou—St. Mary Parish

Texas Co.'s No. 3 State, Sec. 40-17s-9e. Drlg. sdy. sh. 9,610 ft.

Jeanerette—St. Mary Parish

Herton Oil Co.'s No. 6 Roane, Sec. 38-13s-9e. Drlg. sh. 3,027 ft.

Jefferson Island—Iberia Parish

Texas Co.'s No. 3 Jefferson Salt Mining Co., Sec. 58-12s-5e. Drlg. sh. 6,020 ft.

Jennings—Acadia Parish

Carter-Perrin & Brian No. 1 Martel, Sec. 47-9s-2w. T.D. 1,916 ft.; 6-in. csg. 1,862 ft.; T.A.

Glassell-Glassell No. 8 Trusher, Sec. 42-9s-2w. Drlg. sh. 1,612 ft.

Shell Oil Co., Inc., No. 7 Conover, Sec. 40-9s-2w. 5½-in. csg. 7,166 ft.; T.D. 7,704 ft.; P.B. 7,666 ft.; cleaned hole to 6,888 ft.

Stanolind O. & G. Co. No. 115 Crowley Oil & Min. Co., Sec. 48-9s-2w. Drlg. sd., sh.&L. 6,110 ft.

Lafitte—Jefferson Parish

Texas Co. No. 14 Lafitte, Sec. 20-17s-24e. Loc.

Texas Co.'s No. 5 Madison Realty Co., Sec. 17-17s-4e. Loc.

Texas Co.'s No. 4 Marrero, Sec. 21-17s-24e. Loc.

Texas Co.'s No. 11 Rigolet Cooperative Fur Co., Sec. 29-17s-24e. T.D. 10,325 ft.; W.O.C.

Lake Hermitage—Plaquemines Parish

Gulf Oil Corp. No. 10 La Fourche Basin Lv. Dist., Sec. 2-18-25e. T.D. 7,242 ft.; abd.

Lake Long—La Fourche Parish

Fohs Oil Co. No. 10 State, 1,320 ft. N of No. 3, in Lake. T.D. 3,208 ft.; twisted off D.S.; sdtrkd. 2,940 ft.; T.D. 9,614 ft.; 6-in. csg. 9,614 ft.; perf. csg. 9,355-60 ft.; tstd. S.W. on D.S.T.; sqzd. perf.; W.O.C.; perf. csg. 9,352-55 ft.; flwd. 125 B.O., 340 bbl. S.W.; sqzd. perf.; W.O.C.

Fohs Oil Co.'s No. 11 State, Twp. 17s-19e. Loc.

Lake Mongoulois—St. Martin Parish

Texas Co. No. 7 State, Sec. 10-10s-9e. 7⅝-in. csg. 10,604 ft.; drlg. sdy. sh. 10,775 ft.

Lake Pelto—Terrebonne Parish

Texas Co.'s No. 27 State, Sec. 7-23s-18e. 10¾-in. csg. 1,484 ft.; T.D. 5,233 ft.; salt; T. salt 4,718 ft.; sdtrkd.; T. salt 4,879 ft.; T.D. 5,551 ft.; P.B.; sdtrkd.; drlg. sd.&sh. 5,122 ft.

La Pice—Iberville Parish

Shell Oil Co., Inc.'s No. 1 Lebermuth & Israel. Drlg. 186 ft.

Shell Oil Co., Inc.'s No. 2 Natalbany Lbr. Co., Sec. 19-9s-2e. Drlg. sd. 6,859 ft.

Leeville—Plaquemines Parish

Texas Co.'s No. 7 L.L.&E., Sec. 27-21s-22e. T.D. 5,041 ft.; rmg.

Lirette—Terrebonne Parish

Humble O. & R. Co. No. 1 W. E. Mont, Sec. 32-19s-19e. Loc.

New Iberia—Iberia Parish

Wm. Helis' No. 14 Bernard, Sec. 54-12s-7e. T.D. 3,060 ft.; 7-in. csg. 3,042 ft.

Wm. Helis No. 9 Bolivar, Sec. 56-12s-7e. Salt 3,402 ft.; P.B.; sdtrkd.; T.D. 3,794 ft.; 7-in. csg. 3,781 ft.

Wm. Helis No. 7 J. E. Schwing, Sec. 56-12s-7e. Drlg. sh. 8,604 ft.

Texas Co. No. 2 Bryant, Sec. 25-12s-7e. R.U.

Texas Co.'s No. 11 J. P. Duhe, Sec. 26-12s-7e. T. salt 3,412 ft.; T.D. 3,415 ft.; P.B. 2,500 ft.; sdtrkd.; drlg. sh. 3,607 ft.

Texas Co.'s No. 3 Schwing, Sec. 71-12s-7e. Drlg. sh. 2,020 ft.

North Elton—Allen Parish

Stanolind O. & G. Co.'s No. 1 G. W. Jenkins, Sec. 23-6s-3w. Loc.

Paradis—St. Charles Parish

Texas Co. No. 2 L.L.&E. Paradis, Sec. 6-14s-20e. Drlg. sh. 9,312 ft.

Port Barre—St. Landry Parish

Gulf Oil Corp.'s No. 15 Wilson & Cochran, Sec. 4-6s-5e. T.D. 4,781 ft.; P.B.; sdtrkd. 4,100 ft.; drlg. sh. 5,018 ft.

Pan American Prod. Co.'s No. 4 Cormier, Sec. 4-6s-5e. T.D. 5,425 ft.; perf. csg. 4,959-65 ft.; tstg.

Pan American Prod. Co. No. 8 Cormier, Sec. 4-6s-5e. R.U.

T. D. Spill No. 1 Gaudet, Sec. 4-6s-5e. S.D. 4,700 ft.

Potash—Plaquemines Parish

Humble O. & R. Co. No. 40 Orleans Lv Bd., Sec. 13-18s-15e. Drlg. sd. 4,196 ft.

Humble O. & R. Co.'s No. 41 Orleans Lv. Bd., Sec. 13-18s-15e. Loc.

Quarantine Bay—Plaquemines Parish

Gulf Ref. Co. No. 5-A Orleans Lv. Bd., Sec. 7-19s-17e. T.D. 8,504 ft.; 7-in. csg. 8,591 ft.; perf. csg. 8,547-55 ft.; I.P. 536 B.P.D.; ⅛-in. ck.

Gulf Oil Corp.'s No. 1-A Plaquemines, Sec. 18-19s-17e. T.D. 8,219 ft.; 5-in. csg. 8,207 ft.; I.P. 693 B.P.D.; ¼-in. ck.

Gulf Oil Corp.'s No. 3-A Plaquemines Ld. Co., Sec. 7-19s-17e. Loc.

Gulf Oil Corp. No. 9 State QQ, Sec. 18-19s-17e. Loc.

Gulf Oil Corp. No. 13 State, Sec. 8-19s-17e. T. sd. 8,503 ft.; T.D. 8,551 ft.; perf. csg. 8,534-49 ft.; I.P. 830 B.P.D.; ¼-in. ck.

Gulf Oil Corp.'s No. 15 State, Twp. 19s-17e. R.U.

Sorrento—Ascension Parish

Sorrento Synd. No. 1 L. L. Bernard, Sec. 27-10s-4e. Drlg. sdy. sh. 4,816 ft.

South Houma—Terrebonne Parish

Shell Oil Co., Inc.'s No. 4 Peters, Sec. 72-18s-18e. Loc.

South Jennings—Jeff Davis Parish

Stanolind O. & G. Co.'s No. 1 Dan Doherty, Sec. 15-10s-3w. Loc.

South Roanoke—Jeff Davis Parish

Continental Oil Co. No. 2 Calcasieu Natl. Bnk., Sec. 35-10s-4w. T.D. 9,960 ft.; tstg.

Valentine—La Fourche Parish

Wm. Helis' No. 5 Valentine Sugars Inc., Sec. 2-17s-20e. 10¾-in. csg. 1,632 ft.; T.D. 7,080 ft.; rmg.

Pan American Prod. Co. No. 3 Ducas-Abribat. T.D. 6,750 ft.; abd.

Pan American Prod. Co.'s No. 21 Harang, Sec. 9-17s-20e. T.D. 5,427 ft.; run 5½-in. csg.

Pan American Prod. Co.'s No. 3-A Community, Sec. 10-17s-20e. Drlg. sh. 3,015 ft.

Venice—Plaquemines Parish

Tide Water Asso. Oil Co.'s No. 6 Buras Lv. Bd., Sec. 27-21s-30e. T.D. 10,074 ft.; circulating.

Villa Platte—Evangeline Parish

Continental Oil Co. No. 2 Corell, Sec. 36-3s-2e. T.D. 10,360 ft.; 6-in. csg. 10,360 ft.

Continental Oil Co.'s No. 5 Orise Deville, Sec. 3-4s-2e. T.D. 9,086 ft.; comp.; no ga.

Continental Oil Co.'s No. 6 Ludeau Haas, Sec. 45-3s-2e. Drlg. sh. 4,610 ft.

Continental Oil Co.'s No. 5 Opelousas, St. Landry, Sec. 44-3s-2e. Drlg. sh. 6,026 ft.

Continental Oil Co.'s No. 3 Vidrine, Sec. 34-3s-2e. Drlg. sh. 8,930 ft.

West Gueydan—Vermilion Parish

Magnolia Pet. Co.'s No. 2 A. Cormier, Sec. 5-12s-2w. Drlg. sdy. sh. 7,006 ft.

West Lake Verret—St. Mary Parish

Shell Oil Co., Inc., No. 1 Michel, Sec. 1-14s-12e. Drlg. sd. 10,792 ft.

White Castle—Iberville Parish

Shell Oil Co., Inc.'s No. 1 Baist. Drlg. sh. 1,729 ft.

Woodlawn—Jeff Davis Parish

Union Sulphur Co. No. 1 Raymond Hebert, Sec. 6-9s-5w. Cg. sh. 9,545 ft.

Union Sulphur Co.'s No. 1 E. A. Martin, Sec. 12-9s-5w. Loc.

Union Sulphur Co. No. 3 Mrs. O'Miller, Sec. 7-9s-5w. Drlg. sh. 2,712 ft.

S. LOUISIANA WILDCATS

Acadia Parish

Mareaux Oil Corp. No. 2 J. E. Settig, Sec. 17-7s-1w. T.D. 1,180 ft.; S.D.; T.A.

Providence Oil Co.'s No. 1 Jos. John est., Sec. 37-10s-1e. Drlg. 2,030 ft.

Tri Parish Drillers, Inc., No. 1 Paul Stag, Sec. 4-7s-1w. M.I. rig.

Allen Parish

Bel Oil Co. No. 2 J. A. Bell Est. (Blue Springs). Drk.

Assumption Parish

Shell Oil Co., Inc.'s No. 1 C. S. Eellis, Sec. 9-16s-14e. R.U.

Beauregard Parish

Atlantic Ref. Co. No. 1 Lutcher Moore, Sec. 22-3s-11w. Loc.

Atlantic Ref. Co. No. 1 Rice Ld. & Lbr. Co., Sec. 22-3s-11w. Loc.

California Co.'s No. 2 Long Bell Lbr. Co., Sec. 12-5s-10w. Loc.

Republic Prod. Co.'s No. 9 Lutcher Moore Lbr. Co., Sec. 1-7s-12w. Drk.

Calcasieu Parish

C. L. Arnette's No. 1 Arthur Welch, Sec. 19-10s-12w. 10¾-in. csg. 130 ft.; T.D. 395 ft.; S.D.
Gulf Oil Corp.'s No. 1 Amanda Brannon, Sec. 16-11s-10w. Drlg. sh. 3,520 ft.
Humble O. & R. Co. No. 2 Edgewood, Sec. 32-7s-10w. Drlg. sh. 9,352 ft.
La.-Gulf Coast Drlg. Co. No. 1 Langdon, Sec. 13-10s-13w. S.D. 1,890 ft.

East Baton Rouge Parish

Farris & Golding Drlg. Co.'s No. 1 D. E. McEnnis, Sec. 58-7s-1e. Drk.

Iberville Parish

Housh & Thompson No. 1 Kessler & Folse, Sec. 40-11s-13e. S.S.O.; T.D. 10,823 ft.; abd.

Jefferson Parish

California Co. No. 1 Adam Rutley, Sec. 2-16s-23e. 20-in. csg. 163 ft.; 13⅜-in. csg. 1,980 ft.; 9⅝-in. csg. 8,496 ft.; drlg. sh. 11,594 ft.
Continental Oil Co. No. 1 Bernstein, Sec. 2-16s-23e. Drlg. sh. 7,120 ft.

Jeff Davis Parish

Housh & Thompson's No. 1 Lacassine, Sec. 29-11s-5w. R.U.
Union Sulphur Co. No. 2 H. B. Tietje, Sec. 36-2s-4w. T.D. 9,543 ft.; abd.

Lafayette Parish

Stanolind O. & G. Co.'s No. 1 Lacaze Billeaud et al, Sec. 35-10s-5e. M.I.M.

La Fourche Parish

Gulf Oil Corp. No. 2 Grandison, Sec. 21-20s-23e. 13⅜-in. csg. 2,090 ft.; T.D. 8,210 ft.; 9⅝-in. csg. 8,206 ft.
Tide Water Asso. Oil Co. No. 1 Delta Farms, Inc., Sec. 6-17s-23e. Drlg. sh. 2,600 ft.

Livingston Parish

Humble O. & R. Co.'s No. 1 Great Southern Lbr. Co., Sec. 27-7s-5e. Drlg. sh. &shll. 7,584 ft.

Orleans Parish

W. T. Burton No. 1 L.&N.R.R., Sec. 18-11s-15e. T.D. 10,394 ft.; 5½-in. csg. 10,274 ft.; perf. csg. 10,164-69 ft.; swbd. wash wtr.; drld. out to T.D. 10,300 ft.; perf. csg. 10,285-94 ft.; swbd. S.W.; P.B. 10,175 ft.; swbd. oil and showed little gas; reperf. csg. 10,116-24 ft.; well made one head, blowing wash wtr., trace of oil; P.B. 10,150 ft.; acd.; perf. csg. 10,138-44 ft.; swbd. little oil and brksh. wtr.; S.D.
W. T. Burton No. 3 L.&N.R.R., Sec. 25-11s-14e. Loc.
W. T. Burton No. 2 State-Lake Pontchartrain, Twp. 10s-10e. Driv. piling.
W. T. Burton No. 3 State-Lake Pontchartrain, Sec. 18-11s-15e. Loc.
W. T. Burton No. 4 State-Lake Pontchartrain, Sec. 18-11s-15e. Loc.

Plaquemines Parish

Gulf Oil Corp. No. 8 State P.P., Sec. 18-23s-31e. 13⅜-in. csg. 1,949 ft.; 9⅝-in. csg. 8,305 ft.; drlg. sd.&sh. 9,934 ft.
Texas Co. No. 1 State-Bastian Bay, Sec. 43-20s-28e. 10¾-in. csg. 1,924 ft.; drlg. sdy. sh. 9,547 ft.

Rapides Parish

Gulf States Prod. Co.'s No. 1 Dunman & Robinson, Sec. 69-4n-3w. Loc.
Smith & Aarnes No. 1 Eota Realty, Sec. 12-4n-3e. Drk.

St. Bernard Parish

Carter, Molero & Brian, Sec. 129-14s-14e. Drk.; abd.
Gulf Ref. Co. No. 4-State-R.R. (Lake Borgne), Twp. 12s-15e. 9⅝-in. csg. 8,161 ft.; T.D. 10,632 ft.; P.B. 9,700 ft.; rmd. to 9,658 ft.; lost core bbl.; P.B. sdtrkd. 8,912 ft.; T.D. 10,528 ft.; 7-in. csg. 10,494 ft.; fsg.

St. John the Baptist Parish

Pan American Prod. Co. No. 1 Mill, Sec. 12-11s-7e (LaPlace prospect). 10¾-in. csg. 2,837 ft.; T.D. 8,896 ft.; run elec. sur.

St. Martin Parish

Continental Oil Co.'s No. 1 Leveret, St. John Plantation, Sec. 42-10s-7e. O.W.D.D. T.D. 9,032 ft.; 9⅝-in. csg. 2,051 ft.; drlg. sh. 9,920 ft.
Wm. Helis' No. 1, Levert, St. John Plantation, Sec. 33-9s-7e. T.D. 5,462 ft.; taking sidewall cores.
Wm. Helis' No. 1 Rycade Oil Co., Sec. 33-9s-7e. Loc.
Shell Oil Co., Inc., No. 1 Iberville Ld. Co., Sec. 86-8s-7e. Cg. sh. 8,304 ft.

St. Mary Parish

Perry S. Cooney No. 1 A. W. Allain, Sec. 46-13s-9e. S.D. 2,600 ft.

St. Tammany Parish

Honey Island Dev. Corp. No. 1 W. C. Forbes, Sec. 33-7s-15e. T.D. 100 ft.; 20-in. csg. 87 ft.; abd.

Terrebonne Parish

Continental Oil Co. et al's No. 1 Peters, Sec. 32-19s-15e. Drlg. sh. 1,610 ft.
Shell Oil Co., Inc., No. 1-A Peters, Sec. 47-19s-19e. Cg. 10,943 ft.
Texas Co. No. 3 State-Coon Point, Twp 23s-14e. 10¾-in. csg. 1,860 ft.; drlg. sh. 7,383 ft.

Vermilion Parish

La. Ld. & Explo. Co.'s No. 3 La. Fur Co., Sec. 9-15s-1e. Dredge canal.

Vernon Parish

Pan American Prod. Co.'s No. 1 Anderson-Post Lbr. Co., Sec. 27-2n-11w. 9-in. csg. 985 ft.; T. Wlx. reported at 4,550 ft.; drlg. and cg. 5,898 ft.

TEXAS

Week Ending October 7

GULF COAST FIELDS

Anchor—Brazoria County

Humble O. & R. Co.'s No. 1 M. W. Metzler, J. de Jesus Valderas Sur. Drk.
Glenn McCarthy's No. 1 Ida M. Salmon and John Muma, Geo. Robinson Sur. R.U.

Old Ocean—Brazoria County

Harrison & Abercrombie No. 6 Armstrong-fee, Polly-Chance Sur. Drlg. sd. &sh. 9,696 ft.
Harrison-Abercrombie's No. 7 Armstrong, Polly & Chance Sur. Drlg. sh. 2,536 ft.
Harrison & Abercrombie No. 2 Augsburger, Chas. Breen Sur. T.D. 10,355 ft.; tstg.
Mid-Continent Pet. Corp. No. 2 Chenault, C. Breen Sur. T.D. 10,400 ft.; tstg.
Sun Oil Co. No. 2 Borsodi, C. Breen Sur. 9⅝-in. csg. 7,005 ft.; drlg. sh. 10,150 ft.
Sun Oil Co.'s No. 3 Campbell, C. Breen Sur. R.U.

Cedar Point—Chambers County

Standard Oil Co. of Texas' No. 24-118 State. Drlg. sh. 2,436 ft.

Seabreeze—Chambers County

Sun Oil Co. No. 2 Hoffman, T.&N.O. Sur. No. 131. T.D. 8,400 ft.; W.O.C.

South Cotton Lake—Chambers County

Salt Dome Oil Co.'s No. 3-A Lawrence, S. Barrow Sur. T.D. 6,530 ft.; 5½-in. csg. 6,512 ft.

Turtle Bay—Chambers County

Stanolind O. & G. Co.'s No. 2 State, Tr. 39. Loc.; dredge canal.

Garwood—Colorado County

Davis & Co., Inc., No. 1 J. R. McLane, I.&G.N. Sur. 41. Cg. sh. 8,703 ft.

Big Creek—Fort Bend County

Merrimac Oil Corp. No. 1 George, B. Wickson Sur. (SW flank). Spd. and S.D.

Thompson—Fort Bend County

John Blaffer's No. 2 Davis, Robt. Peebles Sur. T.D. 5,400 ft.; tstg.

League City—Galveston County

Phillips Pet. Co. No. 1 Dr. O. Patton (1 mi. E of production). Perf. csg. 9,177-97 ft.; flwd. S.W.; sqzd. perf.; S.D.
Phillips Pet. Co.'s No. 3 Stewart Title Guaranty Co., S. F. Austin Sur. R.U.
Phillips Pet. Co.'s No. 4 Stewart Title Guaranty Co., S. F. Austin Sur. Drlg. sh. 2,436 ft.
Phillips Pet. Co. No. 1 Wimhurst (NW extension). Drlg. sh. 10,962 ft.

Aldine—Harris County

Earl C. Hankamer's No. 1 O. P. Hairgrove, S. L. Noble Sur. Spd.

Bammel—Harris County

H. M. Harrell's No. 1 Graves, C. Walters Sur. R.U.

Clear Lake—Harris County

Humble O. & R. Co.'s No. 14-C Humble-West, J. Lindsay Sur. Drlg. sh. 5,867 ft.
Humble O. & R. Co.'s No. 19-C Humble-West, Wm. Doble Sur. Loc.
Humble O. & R. Co.'s No. 20-C Humble-West, Wm. Doble Sur. Drlg. sh. 4,036 ft.

Clinton—Harris County

Stanolind O. & G. Co. No. 2 Edwards, Reels & Trobough Sur. Drk.

Friendswood—Harris County

Humble O. & R. Co.'s No. 3 Anderson, T. Choate Sur. T.D. 6,045 ft.; W.O.C.
Humble O. & R. Co.'s No. 4-B Godwin, W. K. Smith Sur. Drlg. sh. 3,768 ft.

Mykawa—Harris County

McDannald Oil Co.'s No. 1 Schmelts, R. Boatright Sur. Drlg. sh. 6,060 ft.

Texana—Jackson County

Moore-Ahern's No. 1 Clement, Stephen F. Austin Sur. R.U.

Fannett—Jefferson County

Gulf Oil Corp.'s No. 12 Burrell, W. H. Smith Sur. T.D. 2,543 ft.

La Belle—Jefferson County

Sun Oil Co. No. 5 Broussard-Hebert, T. &N.O. Sur. No. 207. T.D. 8,710 ft.; perf. csg. 8,685-90 ft.; flwd. S.W.; made sqze. job; perf. csg. 8,667-71 ft.; tstd. S.W.; made sqze. job; S.D.

Lovells Lake—Jefferson County

Rowan Drlg. Co.'s No. 1 Bordages, Wm. Carr Sur. T.D. 7,810 ft.; 5½-in. csg. 7,810 ft.
Humble O. & R. Co.'s No. 10 Broussard, M. Grange Sur. Drlg. sh. 3,839 ft.
Humble O. & R. Co.'s No. 6 Jefferson Ld. Co., C. Hillebrandt Sur. Drlg. sh. 3,739 ft.
Stanolind O. & G. Co.'s No. 1 B. A. Steinhagen, Wm. Carr Sur. T.D. 7,806 ft.; 5½-in. csg. on bttm; perf. csg. 7,789-94 ft.

South China—Jefferson County

Hebert-Smith's No. 1 Broussard, Sarah Miles Sur. R.U.

Esperson—Liberty County

General Crude Oil Co.'s No. 6-B Esperson, A. McNeil Sur. T.D. 7,265 ft.; W.O.C.
General Crude Oil Co.'s No. 8-B Esperson, A. McNeil Sur. Drlg. sh. 7,578 ft.

Hull—Liberty County

Gulf Oil Corp. No. 115 Phoenix Dev. Co., J. Devore Lge. (SE flank deep test). T.D. 6,595 ft.; rmg.

Martha—Liberty County

Stanolind O. & G. Co.'s No. 1 Frank Charzan, I.&G.N. Sur. 7. Drlg. 2,636 ft.
Stanolind O. & G. Co.'s No. 1 R. G. Palmer, I.&G.N. Sur. 7. M.I.M.

Hamman—Matagorda County

J. M. Copeland No. 1 G. L. Butler, J. T. Belknap Sur. Loc.

Orange—Orange County

John Mayo No. 1 M. J. Williams, Dyson Sur. R.U.

Port Neches—Orange County

Texas Co. No. 16 Kuhn, M. E. Hall Sur. T.D. 6,402 ft.; P.B. to sdtrk.; P.B. 4,930 ft.; to sdtrk.
Texas Co.'s No. 9 Stark, M. A. E. Hall Sur. 1. Loc.

Ace—Polk County

Dick Schwab No. 1-C Kirby-West Lbr Co., G. A. Thompson Sur. Loc.
Shell Oil Co., Inc.'s No. 1 Kirby-West Lbr. Co., G. S. Thomas Sur. T.D. 7,837 ft., oil sd.

Segno—Polk County

J. K. Dorrance's No. 5-A Wing, I.&G.N. Sur. Loc.
Gulf Oil Corp. No. 4 Quinn, A. Morales Sur. R.U.
Gulf Oil Corp.'s No. 22 Wing, I.&G.N. Sur. 15. Drlg. sh. 7,938 ft.
Gulf Oil Corp.'s No. 23 Wing, P. Garcia Sur. Drlg. sh. 2,236 ft.
Humble O. & R. Co.'s No. 16 B. X. Kirby Lbr. Corp., P. Garcia Sur. T.D. 8,182 ft.; W.O.C.
Humble O. & R. Co.'s No. 19-Bx Kirby Lbr. Co., P. Garcia Sur. Loc.

Spurger—Tyler County

Republic Prod. Co.'s No. 24 fee, N. Hurd Sur. T.D. 7,764 ft.; 5½-in. csg. 7,756 ft.; perf. csg. 7,708-7,698 ft.
Republic Prod. Co.'s No. 25 fee, N. Hurd Lge. Cg. 7,700 ft.
Republic Prod. Co.'s No. 26 fee, N. Hurd Sur. Loc.

GULF COAST WILDCATS

Brazoria County

Fabriguze et al No. 1 Freeport Sulphur, Stephen F. Austin Sur. (Byran Mound). M.I.M.
Hamman Explin. Co. No. 1-B Darrington, State Prison Farm, F. Bingham Sur. Rig.
D. M. Hill's No. 1 Max Bader, Wm. Smeathers Lge. Loc.
Glenn McCarthy's No. 1 J. C. Carr, J. D. 996-10,004 ft.; T.D. 10,548 ft.; 7-in. csg. 10,538 ft.; perf. csg. 10,460-67 ft.; flwd. 75 B.F., 95% dist.; R.U. to pull tstg. tool.
Glenn McCarthy No. 1 Houston Farm Dev., James F. Perry and E. Austin Sur. 7. T.D. 10,350 ft. (cor.); flwg. 32 bbl. dist. per day; ¼-in. ck.; tstg.
Glenn McCarthy's No. 2 Houston Farm Dev. Co., J. Perry & E. Austin Sur. 7. Drlg. sh. 2,360 ft.
Titanic Oil Co.'s No. 1 Allen, J. G. and G. W. McNeel Lge. (Allen dome). R.U.

Chambers County

Geo. Anderson No. 1 Julia Casey, W. D Smith Sur. Loc.
Edwards Drlg. Co.'s No. 1 Sloan, G. B Jamison Sur., Turtle Bay extension area. T.D. 6,585 ft.; 5½-in. csg. 6,576 ft.; perf. csg. 6,553-55 ft.; I.P. 30 B.P.D.; 12/64-in. ck.
J. R. Turnbull et al No. 1 W. C. Shepherd, R. A. Porter Sur. T.D. 6,466 ft.; 7-in. csg. 6,429 ft.; flwd. oil, gas, and wash wtr.; sanded up; sdtrkd. 6,463 ft.; T.D. 6,700 ft.; P.B.; perf. 6,457-65 ft.; S.D.

Colorado County

Cockburn Oil Corp. No. 1 R. W. Ferrs, H. Chrisman Sur. Loc.
Strake Pet. Co. No. 1 Ned Burford, E. Tumlinson Sur. 10¾-in. csg. 998 ft.; T.D. 7,582 ft.; abd.

Fort Bend County

H. C. Cockburn No. 1 Dzierzanowski, Emma Meyer Sur. 8. 10¾-in. csg. 1,058 ft.; T.D. 7,743 ft.; flwg. 112 B.F.P.D.; 7/32-in. ck.; 95% dist., 5% S.W. tstg.
Hebert & Smith's No. 1 A. P. George, H.&T.C. Sur. 39. T.D. 5,352 ft.; abd.
Magnolia Pet. Co.'s No. 1 G. H. Huntington, Henry Scott Sur. R.U.

Galveston County

Sun Oil Co.'s No. 1-176 State. Drlg. sh. 1,576 ft.

Harris County

L. R Wilhite et al No. 1 Houston-Harris Co. Ship Channel, Nav. dist., Ezekiel Thomas Sur. 13-in. csg. 388 ft.; S.D 2,600 ft.

Jackson County

Skelly Oil Co.'s No. 1 Kunover, Schwind & Mahers subd., Blk. 4 (Francitas field). Cg. sh. 7,369 ft.

Jefferson County

I. E. Harwell No. 1 State, Gulf of Mexico. T.D. 5,840 ft.; D.S. stk.; pulled in two; S.D.

Montgomery County

A. T. Grabowski et al's No. 1 Gay, Wm. Landrum Sur. T.D. 4,110 ft.; abd.

Orange County

American Eagle Oil Co. No. 2 Geo. Pell, Geo. A. Patillo Sur. Loc.

Polk County

Patrick-Tyrell Drlg. Co. No. 1 O. L. Jackson, C. Devore Sur. Loc.

San Jacinto County

F. J. Hynes No. 1 Foster Lbr. Co., M. Brown Sur. Rig.
F. J. Hynes No. 2 Foster Lbr. Co., M. Finch Sur. Loc.

Tyler County

Oil Equity Corp.'s No. 2 Kountz, E. Smith Sur. Loc.

Washington County

Mount Selman Oil Co. No. 1 Fritz Fueiberg, W. Lightfoot Sur. S.D. 1,413 ft.

Wharton County

Humble O. & R. Co.'s No. 1 W. E. Rogers, D. D. Baker Sur. T.D. 8,252 ft.; abd.
Dr. T. M. Neal No. 1 fee, Elisha Flack Sur., Loc.
Sun Oil Co.'s No. 1 Winnie M. Pool, G. H.&R.R. Sur. Drlg. sh. 1,871 ft.

S. W. TEXAS WILDCATS

Aransas County

Continental Oil Co.'s No. 1 St. Charles Co., R. D. Blassman Sur. 18⅝-in. csg. 290 ft.; drlg. sh. 3,810 ft.

Bee County

Mills Bennett Prod. Co.-Anderson-Prichard Oil Corp.'s No. 1 D. E. Robinson, J. M. Uranga Sur. Loc.

Bell County

G. P. Shelton et al No. 1 Nelson, Michael Griffin Sur. S.D. 1,208 ft.

Bexar County

C. A. Smith's No. 1 W. G. Schuwirth, Jose Antonio de la Garza Sur. S.D. 1,165 ft.
J. A. Tarver's No. 1 Florence Lam, Manuel de Luna Sur. 3. Drlg. sh. 1,542 ft.

Blanco County

E. L. Nixon's No. 3 Crist, John McClenechen Sur. 94. S.D. 50 ft.

Brooks County

Magnolia Pet. Co.'s No. 1 Vivian Rust, La Gloria townsite sub. Spd.

Caldwell County

Dr. J. F. Atha's No. 1 G. W. Carter, Gideon Pace Sur. T.D. 1,793 ft.; 7-in. csg. 1,744 ft.

Calhoun County

Coronado Corp. No. 1 K. Welder, Hidalgo Sur., 3 mi. SE Seadrift. Drlg. sh. 7,630 ft.

Cameron County

Sal Vieja Oil Co. et al's No. 2 Gatewood Newberry, San Martin gr. Drlg. sh. 7,569 ft.

De Witt County

Atlantic Ref. Co.'s No. 1 Pearl Conwell, Chas. Lockhart Sur. Loc.
Marshall Purvis No. 1 Afflerback, L. W. Criswell Sur. T.D. 6,450 ft.; P.B.; sdtrkd.; drlg. sh. 7,150 ft.

Duval County

W. L. Catlin et al No. 1 Louis Escapule, J. Poitevent Sur. No. 73. Loc.
Sam Cunningham et al's No. 1 E. A. Lopez, P. Caballero Sur., Sec. 14. T.D. 6,505 ft.; abd.
Harvey & Henderson's No. 1 Welder, Samuel Alexander Sur. Drlg. sh. 2,360 ft.

Magnolia Pet. Co.'s No. 1 D.C.R.C., J. Poltevent Sur. Drlg. sh. 220 ft.
Ownby Drlg. Co.'s No. 1 Hinojosa, A.B. &M. Sur. 131. Loc.
South Coast Oil Corp., et al's No. 1 F. G. Garcia, H.&G.N. Sur. T.D. 5,304 ft.; abd.
Standard Oil Co. of Texas' No. 1 Jack Casey, San Pedro de Charco Redondo gr. T.D. 6,746 ft.; 7-in. csg. to test 6,722 ft.; tstg.

Falls County

J. Shaunfield No. 1 Barganier, J. M. Graham Sur. T.D. 1,195 ft.; Buda L.; S.S.O.; waiting on csg.

Goliad County

D. C. Matthews et al's No. 1 G. J. Swickheimer, Cuadrilla Irrg. Sur. 10-in. csg 306 ft.; T.D. 3,509 ft.; 5½-in. csg. 2,914 ft.; I.P. 430,700 cu. ft. gas; ¾-in. ck.; T.P. 1,225 lb.; C.P. 1,240 lb.

Gonzales County

Mudge Oil Co.'s No. 1 T. G. Edwards-Wesley, W. Pace Sur. R.U.
E. E. Young No. 1 Moore, D. O. Warren Sur. Cg. sh.&lignite.

Guadalupe County

Burton-Garvin & Womack's No. 2 Henry Weil, E. de Los Santos Coy Sur. No 93. R.U.

Hays County

B. C. Mann et al No. 1 Reeder, R Vaughn Sur. T.D. 3,410 ft.; fsg.

Hidalgo County

San Juan Oil Co. No. 1 J. C. Kelly, J. C. Kelly subd., Antonio Velasco Sur., Porc. 70. T.A.

Jim Hogg County

Magnolia Pet. Co.'s No. 4-A Merchant State Bnk. & Tr. Co., S. L. Fite Sur. Drlg. 1,116 ft.
Mayfair Oil Corp.'s No. 1 I. R. Gutierrez, C. Gutierrez Sur. 164. R.U.
C. A. Nibert et al's No. 1 Yeager Sur. 20. S.D. 1,316 ft.
T. S. Seiblenski's No. 1 Down Royalty Corp., El. Javali gr. T.D. 2,523 ft.; abd.

Jim Wells County

Austin Pet. Co. No. 1 H. M. Reed (8 mi. NW Orange Grove), J. Poltevent Sur. Cmtd. surf. pipe 190 ft.; S.D. 210 ft.
Rodney DeLange et al's No. 1 Maggie McNeill, Benito Lopez de Jean gr. Tstd. 450 lb. pres.; D.S.T. 4,762-80 ft.; drlg. sh. 5,069 ft.
Magnolia Pet. Co.'s No. 1 C. C. Hornsby, Los Olmos y Loma Blanca gr. Drlg. sh. 1,839 ft.
Magnolia Pet. Co.'s No. 1 E. H. Stolze et al, Los Olmos y Loma Blanca gr., Lot 16, Blk. 10. Cg. 5,810 ft.
Parr & Delaney Oil Co. et al's No. 1 P. Garcia, La Anima Solo gr. Cg. 4,769 ft.
Royal O. & G. Co.'s No. 1 P. Garcia, La Trinidad gr. T.D. 6,015 ft.; 7-in. csg. 4,705 ft.; tstg.

Kendall County

C. M. Dewey No. 2 Seidensticker, R Davis Sur. No. 20. S.D. 714 ft.

Kimble County

W. S. Kelly No. 1 A. L. Bierchwale, D Lloyd Sur. S.D. 135 ft.
C. H. Wolff & M. C. Moore No. 1 W. J Wilkinson, Brook & Burleson Sur., Sec. 24. S.D. 20 ft.

Kleberg County

Humble O. & R. Co.'s No. 1 M. Garza, Rinconde Santa Gertrudis gr. Drlg. sh. 3,430 ft.
Pure Oil Co.'s No. 1 State, Tr. 171 (Bird Island field). Drlg. sh. 2,739 ft.

Lavaca County

Midway O. & R. Co.'s No. 1 Annie Schumacher. Drlg. sh.&L. 6,115 ft.

Lee County

Fred Pederson et al No. 1 Brown, David Hudson Sur. Pmpd. 100 B.F.; 36 hrs. 3 bbl. oily emulsion; cd. L. 6,461-90 ft.; T.D. 6,571 ft.; S.D.

Live Oak County

Northworthy Proc. Co. et al's No. 1 Knight, T. R. Johnson Sur. Drlg. sh. 2,889 ft.
Smith & Storey's No. 1 J. T. Lyne, J Cooke Sur. 171. T.D. 3,020 ft.; abd.
L. W. Stieren No. 3 Lange, Thos. Adams Sur. T.D. 1,497 ft.

McMullen County

J. C. Carter's No. 1 Thomas Franklin, E. L. Taylor Sur. 30. Loc.
C. D. Scarborough No. 1 First Natl. Bk of Rosebud, Jas. Garner Sur. Drlg. sd. 1,060 ft.
Wellington Oil Co.'s No. 1 Sam Sanger, C. P. Smith Sur. 194. Loc.

Medina County

Elstone Oil Co.'s No. 1 Wm. Mann, J Campbell Sur. 24. T.D. 903 ft.; 8¼-in. csg. 635 ft.

Milam County

M. B. Cloud's No. 1-B Henniger, S. C Robertson Sur. 7-in. csg. 700 ft.; T.D. 777 ft.; pmpd. 1½ B.O. in 5 hrs.; pmpd. dry; W.O.
Green & Owens' No. 1 Mary E. Graham, Chas. Cronea Sur. Loc.
M. A. Hays et al's No. 1 Sroboda, Wm. Punchard Sur. Drlg. sh. 744 ft.
W. H. Lawrence et al's No. 1 J. F. Bartek, Jose De Pena Sur. Drlg. clk. 960 ft.

Nueces County

N. W. Hunter et al's No. 1 A. R. Mantor, Briggs & Kuykendall subd., Blk. 23. Drlg. sdy. sh. 3,020 ft.
John Manley et al No. 1 Ruegg, Geo. H Pauls subd. of Driscoll ranch. Loc.
Premont Pet. Co.'s No. 1 G. A. Langham, Los Sauces gr., Lot 12, Sec. 25. T.D. 5,240 ft.; tstd. 360 ft. oily mud 30 ft. S.W.; T.D. 7,161 ft.; 7-in. csg. 5,681 ft.
Stanolind O. & G. Co.'s No. 1 Jennie Thompson, J. V. L. de Herrera gr. (Riverside field). R.U.

Refugio County

Norsworthy Prod. Co. No. 1 Wood, John Sinnott Sur. T.D. 6,508 ft. (cor.); S.D.
Rutherford & Royal O. & G. Co.'s No. 1 E. E. Swift, Esteben Lopez Sur. Drlg. sh. 4,360 ft.

San Patricio County

Diamond Half Oil Corp.'s No. 1 Walter F. Timon, San Patricio de Hibernia Sur. Drlg. sh. 2,630 ft.
Seaboard Oil Co.'s No. 1 M. C. Smith, Juan Hart & Sons Sur. T.D. 7,296 ft.; 5½-in. csg. 7,108 ft.; perf. csg. 7,058-60 ft.; tstd. S.W.; perf. csg. 6,995-7,000 ft.; tstd. gas and dist.; perf. csg. 5,915-25 ft.; tstd. S.W.
Wellington Oil Co.'s No. 2-B Welder, Victoriano Tares & Pedro Villareal Sur. R.U.
Wellington Oil Co. No. 6 Welder, Hart Sur. (Angelita). T.D. 7,051 ft.; 5½-in. csg. 6,305 ft.; perf. csg. 6,225-35 ft.; R.U. to pmp.

Starr County

Hebert Aid's No. 1 M. Muniz, Jose F. Garza, Porc 71. R.U.
Banks, Miller Oil Co.'s No. 1 McLean, Unit 3, Valle Del Rico Rio Grande subd., J. B. Villareal Porc. T.D. 2,756 ft.; cmtd. csg. 2,425 ft.; perf. csg. 2,316-24 ft.; rec. S.W.
C. L. Foster's No. 1 H. Garza, Juan Salinas, Porc. No. 71. S.D. 100 ft.
Gilcrease Oil Co.'s No. 1 I. G. Gutierrez, J. LaGarza Falcon Porc. 104. Drlg. sd. &sh. 602 ft.
Lyles & Robertson's No. 1 Villareal, C. C.S.D.&R.G.N.G.R.R. Sur. 241. Loc.
Verne Clopton's No. 1 Lee M. Green, J. J. Garza Falcon, Porc. 81, Lot 7, Sh. 85. R.U.
Randon Oil Co.'s No. 1 R. E. Margo, Los Comitas gr. Cg. sdy. sh. 4,641 ft.
W. W. Zimmerman's No. 1 Wood, Porc. 84. Drlg. sh. 2,510 ft.

Travis County

G. C. Richardson's No. 1 U. Chamberlain, Jas. Manning Sur. 37. S.D. 580 ft.

Victoria County

Houston Oil Co.'s No. 1 Emma Martin, Pedro Gallardo Sur. Cd. gas sd. 2,152-58 ft.; D.S.T. tstd. 350 lb. W.P.; cg. sd. 2,158 ft.
Geo. E. Smith's No. 1 J. E. Stubbs, R. Manchola Sur. Abd. loc.
Trinity Drillers et al's No. 1 T. G. Edwards, L. Rodriquez Sur. 10¾-in. csg. 485 ft.; T.D. 6,006 ft.; perf. csg. 5,978-85 ft.; rec. S.W.
Trinity Drillers et al's No. 1 B. Vogt, T. T. Victoria Sur. Drlg. sh. 2,436 ft.
Wellington Oil Co. et al's No. 1 J. W. Boothe, T.&N.O. Sur., Blk. 1, Sec. 10. Spd.

Webb County

O. W. Killam's No. 1 fee, H.E.&W.T. Sur. 1859. Drlg. sh. 2,575 ft.
Magnolia Pet. Co.'s No. 2 Garcia-Arriba Alberca De Arriba gr. Drlg. sh. 307 ft.
J. R. B. Moore et al's No. 1 A. S. Billings, C.C.S.D.&R.G.N.G. Sur. 13. Loc.
Tide Water Asso. Oil Co. No. 7 Bruni, Blk. 7, M. Arispe gr. (deep test Bruni field). Drlg. sh. 6,700 ft.

Williamson County

Brown-Gardner et al's No. 1 G. W. Griffin, Harrison Owens Sur. S.D. 2,214 ft.

Zapata County

Joe Martinez No. 2 Bruni, J. V. Borego gr. T.D. 938 ft.; S.D.

WEST TEXAS WILDCATS

Brewster County

H. D. Wilcox's No. 2 Kokernot, Sec. 23 Blk. C, J. V. Massey Sur. Drlg. 1,600 ft.

Cochran County

Atlantic Ref. Co.'s No. 1 Boyd, Labor 11, Lge. 56, Oldham C.S.L. Loc.
Dean & Hyde's No. 1 Reed & Taylor, Sec. 21, Harrison & Brown Sur., SE of Duggan pool. Drlg. wtr. well.
Humble O. & R. Co. No. 1 J. Westheimer, Lab. 1, Lge. 146, Stonewall Co. Sch. Ld. Drlg. 6,683 ft.

Crane County

Gulf Oil Corp. No. 5 M. B. McKnight Sec. 1, Blk. 21-B, P.S.L. Sur. Fsg. tools 5,246 ft.
Gulf Oil Corp.'s No. 12 Waddell, Sec. 30, Blk. 26-B, P.S.L. Sur. Loc.
Magnolia Pet. Co. No. 21 Hardewick-Univ., Blk. 30, Sec. 27, University Sur. (Extension). Drlg. 3,519 ft.

Crockett County

Kimberlin's No. 1 J. W. Robbins, Sec. 4, Blk. B, G.C.&S.F. Sur. S.D.R. 45 ft.

Crosby County

Gulf Oil Corp. No. 1-C Swenson, Sec. 95, Blk. 2, H.&G.N. Sur. Drlg. 7,504 ft.

Dawson County

Ray Albaugh's No. 1 Dewey Hogg (O. W.D.D.). S.D. 4,125 ft.

Ector County

I. T. I. O.'s No. 1-B Johnson, Sec. 39, Blk. 43, T.&P. Sur. Loc.
Sloan & Zook No. 1 J. L. Johnson, Sec. 34, Blk. 43, T.&P. Sur. P.B. 4,167 ft.; tstg. 24 B.O.P.D.; P.B. 4,167 ft.; 19 B.O. and 16 B.W.; 6 hrs., pmpd. 7 B. O. and 7 B.W. daily for 7 days; S.D.O.

El Paso County

Tri-State Oil Co.'s No. 1 Kimble, Sec. 237, A.T.&S.F.R.R. Sur. U.R. 5½-in. 2,118 ft.

Gaines County

Ohio Oil Co. No. 1 W. L. Gibbs, Sec. 270, Blk. G, W.T.R.R. Sur. S.I. 5,268 ft.; flwd. 735 bbl. in 15 hrs. through ¼-in. tbg.; comp.; 973 B.O.P.D. at 5,080-5,268 ft.
Osage Drlg. Co.'s No. 1 G. D. Johnson, Sec. 268, Blk. G, W.T.R.R. Sur. Loc.
Stanolind O. & G. Co.'s No. 1 American Warehouse, Sec. 5, D.&W. Sur., offset to No. 1 Rayner, discovery well. Loc.

Howard County

F. H. E. Oil Co. et al No. 2 D. H. Snyder, Sec. 21, Twp. 1s, Blk. 30, T.&P. Sur.; (extension). C.O. 2,855 ft.
M. L. Richards No. 1 Read, Sec. 36, Blk. 30, T.&P. Sur. Drlg. 2,450 ft.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thaxton, SE¼ Sec. 34, Blk. 74, Twp. 6. S.G. 6,340-45 ft.; T.D. 6,402 ft.
Haymon Krupp No. 1 Briggs, Sec. 24, Blk. 73, Twp. 7, T.&P. Sur. S.D. 6,015 ft.

Irion County

P. I. Fox et al No. 1 J. M. Nutt, Sec. 5, Gonzales C.S.L. S.D.O. 335 ft.

Lynn County

John L. Baldridge No. 1 Alma Lbr. Co., Sec. 151, H.E.W.T. Sur. S.D.O. 4,450 ft.

Pecos County

Rockdale Oil Co. No. 1 A. Sullivan, Sec. 72, Blk. 10, H.&G.N. Sur. S.D.R. 1,500 ft.
Stanley Thompson No. 1 Elsinore Cattle Co., Sec. 54, Blk. D, G.C.&S.F. Sur. Drld. by 7,073 ft.; S.D.O. 500 ft.; S.W. in hole.
Superior Oil Co. No. 1 V. W. Crockett-Continental Oil Co., Sec. 7, Blk. 110, T.C.R.R. Sur. C.&P.

Presidio County

Marfa Oil Co. No. 1 Fischer ranch, Sec 31, Blk. 8, G.H.&S.A. Sur. M.I.M.

Reeves County

Forest Development Corp. No. 1 I. B. Scott, Sec. 286, Blk. 13, H.&G.N. Sur. Prep. P.B. 250 ft.; S.W. rose in hole in 8 hrs. at 5,333-36 ft.; D.&A. 5,336 ft.

Scurry County

Coffield & Guthrie's No. 1 Reiter, Sec 155, Blk. 97, A.&T.C. Sur. Drlg. 60 ft.

Terrell County

E. M. Thomasson No. 1 Bates, Sec. 31, Blk. 1, H.&G.N. Sur. Drlg. 975 ft.

Tom Green County

Dan Short's No. 1 J. G. Davidson, NW part of Lovie P. Moore Sur.; 3,500-ft. test. S.D. csg. 2,476 ft.

Upton County

N. A. Moore's No. 1 A. M. Mayhew, Sec 2, Blk. W, G.C.&S.F. Sur. Drlg. 1,300 ft.

Ward County

Gulf Oil Corp. No. 5 Wristen, Sec. 18, Blk. 5, H.&T.C. Sur.; scheduled Ordovician test. P.B. 2,300 ft.; drlg. out at 2,350 ft.; straightening hole.
Magnolia Pet. Co.'s No. 2-43 Sealy, Sec 43, Blk. F, G.M.M.B.&A. Sur. Drlg. 2,714 ft.

Yoakum County

Fred M. Allison Prod. Co. No. 1 D. T. Bush Est., Sec. 629, Blk. D, J. H. Gibson Sur. S.D.O. 5,462 ft.; made 1½ bbl. S.W. in 6½ hrs.; D.&A. 5,462 ft.
Aloco Oil Co. No. 1 W. S. Knight, Sec. 773, Blk. D, J. H. Gibson Sur. (Extension). Comp.; 773 bbl. at 4,940-5,344 ft.
Sloan & Zook and T. N. Sloan's No. 1 J. E. Fitzgerald, Sec. 22, Blk. D, Gibson Sur., extreme NE cor. of county. Loc.

TEXAS PANHANDLE

Armstrong County

Holmes, Newblock & Haley No. 1 Ed Moore, Sec. 319, Blk. 4-B, H.&G.N. Sur. S.D. csg. 4,440 ft.

Castro County

English et al No. 1 Gundlach, NW¼ Sec. 145, Blk. 6-M, S.K.&K. Sur. Loc.; no report.

Deaf Smith County

Uscan No. 1 Farwell, Sec. 18, Blk. 3, X. Sur. C.O. 5,650 ft.

Hartley County

Phillips Pet. Co. No. 1 W. K. Gordon, Sec. 3, Blk. 44, H.&T.C. Sur. Drlg. 3,455 ft.; showed 34,300,000 cu. ft. gas below 3,415 ft.; drlg. 3,745 ft.

Lipscomb County

Phil O'Neil's No. 1 Jacob Koch, NW¼ SW¼ Sec. 539, T.&T.C.R.R. Sur. S.D. O. 530 ft.

Ochiltree County

James R. Macon et al No. 1 W. R. Norris, SW SE Sec. 212, Blk. 43, H.&T.C. Sur. Bailing rotary fluid preparatory to resuming drlg. with C.T.; T.D. 6,274 ft. prep. acd. and test sec. at 5,000 ft.; est. 6,000,000 cu. ft. gas on D.S.T.

Potter County

Les Whitaker No. 1 D. Pavillard, Sec. 101, Blk. 2, A.B.&M. Sur. Drlg. 550 ft.

Sherman County

Hagy, Harrington & Marsh's No. 1 W. Freeman, Sec. 46, Blk. 2, G.H.&H. Sur. Rig.

Wheeler County

Smith Bros. Ref. Co.'s No. 1 Ribble, Sec. 46, Blk. 5-A, H.&G.N. Sur. S.D. 4,135 ft.

E. C. TEXAS WILDCATS

Anderson County

A. Baggett's No. 1 J. R. Gillispie, J. R. Ferguson Sur., 2½ mi. NE of Frankston. S.D. 4,350 ft.
R. H. Williamson No. 1 O. G. Rogers, Wm. Greenwood Sur., 6 mi. SW of Elkhart. Drlg. 2,200 ft.

Angelina County

Ginter Bros. No. 7 Copes Hrs., J. Morin Sur., 3 mi. E of Dibol. S.D. 800 ft.
McHenry's No. 1 Bowers, A. Flores Sur., 4 mi. N of Lufkin; 3,250 ft. SE of McHenry's No. 1 Russell dry hole at 1,032 ft. Loc.
K. L. McHenry's No. 2 Russell est., A. Flores Sur., 4 mi. N Lufkin. Drlg. 460 ft.

Ellis County

C. M. Beckner et al No. 1 H. A. Styles, A. Bullock Sur., 3½ mi. W of Maypearl. U.R. 905 ft.

Falls County

R. D. Salisbury No. 1 W. M. Shankle, J. A. Manchaca Sur., 1½ mi. NE Chilton. P.B. to acd. at 1,103 ft.

Fannin County

H. W. English's No. 1 T. W. Ayers, J. D. Seales Sur. S.D. 687 ft.
C. Newburn's No. 1 A. G. Allen, M. Caldwell Sur., 7 mi. NE of Banham. Drk.

Freestone County

Brothers Oil Co.'s No. 1 P. D. C. Ball est., M. Rionda Sur., 5 mi. NW of Butler. Drlg. 4,740 ft.
W. H. Keeling's No. 1 Bounds-Longbotham, R. B. Longbotham Sur. S.D. 30 ft.

Grayson County

J. M. Jones' No. 1 Golling, I. Southward Sur., 10 mi. NW of Denison. D. &A. 601 ft.
Ross & Marshall's No. 2 E. Christman, M. Ahuit Sur., 5 mi. NW of Denison. Drlg. 375 ft.
Rutledge Oil Co.'s No. 1 Williams, S. Nix Sur., 2 mi. NE of Van Alystine. M.I. new rig; T.D. 1,173 ft.

Houston County

J. C. Cook and Shell Oil Co.'s No. 1 B. T. Masters, Levina Carpenter Sur., ¼ mi. NW of Grapeland pool; 10,000-ft. test. R.U.
Grapeland Oil Co.'s No. 1 Guice, J. D. J. Procilla Sur., 2 mi. W of Grapeland. Drlg. 5,660 ft.
Humble O. & R. Co.'s No. 1 A. Pouncey, J. G. Thompson Sur., Navarro Crossing area. T.S. 5,884½ ft.; comp. 127 B.O.P.D. at 5,889 ft.
J. C. Wynne et al's (Shell Oil Co., Inc.) No. 1 G. E. Dorsey, M. Sallas Sur., 2½ mi. S of Percilla: E 102 ac. of tr.; 10,000-ft. test. U.R. 700 ft.

Hunt County

Raymond Hedge's No. 1 R. E. Hale, G. W. Wright Sur., ½ mi. NW of Campbell. Drlg. 3,204 ft.
K. E. Jennings' No. 1 V. T. Banks, J. W. Haynes Sur., 5 mi. NE of Greenville; reinstated to test sec. at 2,114 ft.; O.W.D.D. 3,342 ft.
Westmount Oil Co. No. 1 Stevens, J. L. Terry Sur., Abst. 1231, 1½ mi. N of Celeste. D.P. stk.; fsg. 4,916 ft.

Leon County

J. K. Hughes No. 1 Moore, J. N. Boyd Sur., 6 mi. SE Buffalo. Swbg. S.W., and 5% oil 5,534 ft.; S.I. 5,534 ft.

Limestone County

Bunn & Willis' No. 1 Clyde Moore, G. W. McGrew Sur., 1½ mi. NE of Coolidge. Cg. 2,111 ft.
J. R. Bunn's No. 1 F. Winmill, J. C. Neil Sur., 2½ mi. NW of Tehuacana. D.& A.; T.D. 2,493 ft.
M. Samuel's No. 1 C. Barrow, W. G. McKinsey Sur., 4 mi. NW of Thornton. Drlg. 5,508 ft.; prep. cg.

Nacogdoches County

D. McDaniels No. 1 T. H. Seale, J. A. Cherino Sur., just outside of city limits of Cherino. Prep. to D.D. 842 ft.

Navarro County

C. F. Carter's No. 1 Allen Eden, M. Shire Sur., 2 mi. NE of Angus. S.D. 775 ft.

Topaz Oil Co.'s No. 3 Trammel, A. C. Kyser Sur., SW of Flag Lake, 600 ft. S of No. 2 well. T.S. 2,996 ft.; rng. elec. sur.; swbg. and tstg. at 3,004 ft.; good well.

Red River County

Dave Flesch's No. 1 Bailey, J. Robbins Sur., 1 mi. W of Bagwell. W.O.C. 100 ft.

Kansas-Oklahoma Pet. Corp. No. 1 R. H. Ringwald, A. Moore Sur., 3 mi. W of Manchester. Drlg. 806 ft.

Robertson County

J. E. Cox No. 1 Sandifer, H. Henry Sur., 3¼ mi. SE of Franklin. Loc.

Rusk County

A. O. Whittington's No. 1 Kangerga Bros., Ign. Castro Sur., 9½ mi. N and slightly E of Pirtle. Bldg. drk.

Smith County

Dr. Grant's No. 1 J. W. Waters, J. Stapler Sur., 1½ mi. NE of Garden Valley. Drk.

Martin & Moore No. 1 B. H. Lunceford, W. Shipp Sur., 3 mi. NW of Garden Valley. S.D. 2,085 ft.

Texas Co.'s No. 1 A. A. Scritchfield, D. Page Sur., 2 mi. NW of Bullard. Drlg. 6,680 ft.

Trinity County

Gossage et al's No. 1 First Natl. Bnk., B. F. Wright Sur., S of Trinity. R.U. and S.D.

Van Zandt County

O. W. Killiam's No. 1 Republic Ins. Co., J. Salinga Sur., 2 mi. NE of Myrtle Springs. W.O.C. 106 ft.

NORTH TEXAS WILDCATS

Archer County

Waldo E. Stephens et al's No. 1 Hattie B. Adae, SE part of Blk. 7, Palo Pinto Co. Sch. Lds., 3 mi. SE of Griffin pool. Set 10-in. 100 ft.; W.O.C.

Clay County

L. T. Burns No. 1 J. T. Pickett, W. W. Yearly A-745. 6⅝-in. 4,430 ft.; O.S. 4,430-44 ft.; P.B. 4,380 ft.; drld. out to 4,450 ft.; S.D.O.

Shell Oil Co., Inc.'s No. 1 Scaling, C of Blk. 87, J. H. Belcher Sur., 4 mi. S of Burns pool. Drlg. 5,020 ft.

Cottle County

J. E. Burns et al No. 1 J. E. Moss, Sec. 5, Blk. L, A. Forsythe Sur. Jnkd. 225 ft.; skid 20 ft. S; drlg. 390 ft.

Hardeman County

Amerada Pet. Corp. No. 1 W. M. Rice, Sec. 81, Blk. H, W.&N.W. Sur. Drlg. 7,980 ft.

Carter & Taylor's No. 1 Norton, NW cor. 91-ac. tr. in Blk. 3, Robt. Young Sur., 16 mi. N of Quanah. S.D. 256 ft.

G. T. Kimbie No. 1 M. T. Walling, SW¼ Sec. 368, Blk. H, H.W.&N.W. Sur., 5,500-ft. test. Drlg. 3,205 ft.

Jack County

Harper Pet. Corp. No. 2 S. V. Vanhooser, Abst. 1926, J. W. Morrow Sur. T.D 2,030 ft.; S.D.O.

Pitzer & West's No. 1 Sloan, Sec. 2786, T.E.&L. Sur. Drlg. 700 ft.

Montague County

Sackett and Continental No. 1 J. L. Brown, Sec. 58, E.T.R.R. S.D.O. 5,046 ft.

Wichita County

J. R. Price and others No. 1 Hodges, NW¼ of Block 13, Burkburnett townsite, Thomas Redman Sur., Abst. 249. T.D. 1,710 ft.; 6⅝-in. 1,670 ft.; shot with 17 qt.; S.D.O.

Wilbarger County

Lawson & Leavell No. 16 W. T. Waggoner A. Sec. 109, H.&T.C. Sur., Blk. 14; 3,500-ft. test. T.D. 1,446 ft., sh.; S.D.O.

Rogers & Cavin No. 1 A. P. Morris, Sec 3, Blk. 14, SW of Harrold. S.D. 2,373 ft.; wtr.

Wise County

W. F. Holifield et al's No. 1 J. Redell, Rebecca Coleman Sur., Abst. 155, 2 mi. E of Bridgeport. Moved off spdr.

H. M. Muse No. 1 F. F. Kaker, Blk. 16, Matagorda Co. Sch. Ld. Pits.

Young County

H. W. Dyer's No. 1 M. G. Cheney, M. L. Terry Sur., Abst. 1261. Loc.

Gentex Oil Co. No. 1 Burch, Abst. 1770, T. J. Burch Sur. Set 5½-in. at 4,145 ft.; T.D. 4,364 ft.; 5⅓-in. 4,085 ft.; recmtd. and W.O.C.

Pitzer-West and Brasoe-Young No. 1 F. Wray, Abst. 140, J. P. Hume Sur., 4,500-ft. test. T.D. 4,685 ft.; P.B. 4,030 ft.; S.O.&W.; S.D.O.

Stanley Thompson et al No. 1-A J. C. Vaughn, Blk. 3, T.&N.O.R.R. Sur., Abst. 1248; 4,350-ft. cable tool test. Drlg. 4,335 ft.

Taubert & McKee Drlg. Co.'s No. 1 Shanafelt, P. Pointevent Sur., Abst. 1309. 6⅝-in. 4,012 ft.; drlg. 4,188 ft.; no oil.

EAST TEXAS

(Border Counties)

Cass County

G. Scott Hammond's No. 1 Price, C S½ W 40 acres, 125-acre tr., Chas. Ames Sur. 10¾-in. csg. 1,045 ft.; T. Gloyd 5,860 ft.; por.; cleaned hole; conditioning mud at 5,863 ft.; prep. run csg.

Marion County—Other

Otto Davis' No. 1 Hart, Gaines Coore Sur. Set 10-in. csg. 22 ft.; W.O.C.

M. D. Fitzwater No. 1 Mrs. Mary Duncan Jesse Fitzgerald Sur. T.D. 2,558 ft.; swbd. and balled dry; S.D.

J. M. Horn No. 1 W. Taylor, 450 ft. EL, midway N and SL, B.B.B.&C.R.R. A-54 Sur. Set 6-in. csg. 2,289 ft.; T.D. 2,313 ft.; pulled lnr.; C.O.

J. D. Reynolds' No. 1-B Terry est., W. Coore Sur. Set 4½-in. csg. 2,330 ft.; W.O.C.

J. D. Reynolds' No. 2-B Terry est., W. Coore Sur. Drlg. sdy. sh. 2,308 ft.

Marion County—Rodessa

Ark. La. Gas Co.'s No. 2 W. T. Neilson, 1,320 ft. N line, 620 ft. SE line, R. Bennington Sur. Drlg. ck. rk. 2,387 ft.

Texas Co.'s No. 6 Braden, J. M. Fitzgerald Sur. Drlg. 1,020 ft.

Panola County

Turner & Smith No. 1 Panola Dev. Co., 2,500 ft. NL, 1,000 ft. WL, Gillespie Sur. Set 10¾-in. csg. 6,000 ft.; 2 D.S. T.s 5,049 ft. failed; anhy. 4,950 ft.; por. L. 5,040-50 ft., S.W.; cg. 5,725 ft.

Shelby County

Natural Gas Dist. Corp.'s No. 1 W. B. Childress, 1,000 ft. W of Redditt & Gray's No. 2 Pickering, W. M. Snider Sur. Drlg. 3,275 ft.

W. H. Neel et al's No. 1 J. W. Hanson, C 64-ac. tr., A. Sanford Sur. R.U.

WEST CENTRAL TEXAS DISTRICT

Brown County

A. D. Bruce's No. 1 L. S. Mauldin, SW¼ Sec. 15, H.T.&B. Sur., Abst. 464. Fsg. tools 1,691 ft.

J. L. Derrich No. 1 C. V. Harris, Sec. 617, Prosper Mangle Sur. Fsg. tools 1,972 ft.

Kynaston & Cullison's No. 1 L. A. Hill, SW¼ Sec. 35, H.T.&B. Sur. Sp. and S.D. at 125 ft.

C. C. Lockwood's No. 1 T. B. Landreth, SE cor. of Subdivision 2, J. Dickinson Sur. 10. S.D.O. 923 ft.; S.S.O. 922-23 ft.

Plains Prod. Co.'s No. 1 Hill, SE cor. W 123 ac. of M. Mudgett Sur. 63. Drlg. 645 ft.

Wilson Oil Co., Inc., No. 1 M. Bowden, Sec. 138, W. E. Gilliland Sur. Fsg. tools 2,100 ft.

Callahan County

S. Henderson et al's No. 1 I. N. Jackson, SW¼ Sec. 20, E.T.R.R. Sur. Drlg. 467 ft.

Kendrick & Van Zandt's No. 1 A. W. Johnson, SE cor NE¼ Sec. 62, L.A.L. Sur. Drlg. 1,365 ft.

M. M. Little et al No. 1 W. P. Ledbetter, Sec. 4, NW M. Cherry Sur. S.D. test 1,728 ft.; T.D.

J. L. Reeves et al's No. 1 P. G. Hatchett, NW¼ Sec. 30, D.&D.A. Sur. Drlg. 340 ft.

Hal Wagnon et al's No. 1 Wm. Isenhower, Sec. 804, Blk. 5, S.P. Sur. S.D.O. 550 ft.

Coleman County

B. Banner's No. 1 R. R. Powell, NW part of Moses Little Sur. 40. Spd. and S.D.

Coleman Oil & Gas Co.'s No. 1 G. Powell, SE part of Moses Little Sur. No. 40 Drlg. 1,405 ft.

Kynaston-Culberson-Culberson & Bozeman No. 1 J. P. McCord, Sec. 159, J W. Meeks Sur. Drlg. 2,410 ft.

Eastland County

F. S. Holden's No. 1 J. F. Nichols, L. A. McDonals Sur., Abst. 829. Loc.

Lone Star Gas Co.'s No. 1 F. J. Kimmel, Sec. 87, Blk. 4, H.&T.C.R.R. Sur. Drlg. 890 ft.

J. L. Reeves No. 1 J. V. Parker, NW part of Wm. Van Norman Sur. Drlg 3,045 ft.

Erath County

T. Gray's No. 1 C. Young Hrs., NW cor. of Stephen Smith Sur., Abst. 682 S.D.O. 89 ft.

T. G. Jackson No. 1 J. W. Taylor, Prater Sur., Abst. 1029, 4 mi. NE of Desdemona. S.D. csg. 2,400 ft.

J. F. Monissey et al's No. 1 R. J. Sikes,

Hamilton County

Wallace & Vickers' No. 1 C. C. Lund, J. P. Bailey Sur. 51. S.D.O. 3,790 ft.

Jones County

Keeler's No. 1 Radford, SE¼ Sec. 20, Blk. 4, H.&T.C.R.R. Sur. S.D.O. 1,800 ft.

N. H. Martin & Sons No. 1 Wirt Davis, SW Subd. No. 7, F. M. Smyth Sur. No. 3, C.O. after shot 1,708-13 ft.; est 200 B.O.P.D.; comp.

Moutray-King Oil Co.'s No. 1 J. B. Rutledge, Subd. 33, Sec. 2, Blk. 20, T.&P. Sur. Loc.

A. H. Tarver No. 1 A. S. Barkley, Sec. 54, Deaf and Dumb Asyl. Lds. Fsg. 5,118 ft.

Ungren & Frazier's No. 1 J. W. Barnes, N 80 acres of SE¼ Sec. 48, Blk. 15, T.&P. Sur. U.R. to 2,060 ft.; T.D.

Mills County

D. Lane's No. 1 J. W. Spinks, J. Douglas Sur. 5. S.D.R. 2,430 ft.

Nolan County

Green & Owens' No. 1 Tipton, Sec. 43 Blk. 19, T.&P. Sur. Sat. from 5,135-38 ft.; 116 B.O. in 2 hrs.; est. 450 B.O. P.D.; prep. run csg.

Plymouth Oil Co. No. 1 F. M. McClure, Sec. 49, Blk. 23, T.&P. Sur., 5,000-ft. test. Drlg. 4,380 ft.

Palo Pinto County

W. K. Gordon No. 1 W. R. Ringe, Sec 81, Blk. 2, T.&P. Sur. S.D.O. 3,563 ft.; 2,000,000 cu. ft. gas.

J. Jones' No. 1 R. H. Gauldin, NW cor. Sec. 1743, T.E.&L. Sur. Loc.

Shackelford County

Owens-Sneboid Oil Corp.'s No. 1 E. P. Olsen, SW¼ Sec. 163, B.B.B.&C. Sur. 1 mi. SW of Ivy pool. S.D. 3,215 ft.; no oil.

Stephens County

Geo. E. Fagg No. 1 Richardson, Sec. 6, Blk. 31, S.P.R.R. Sur.; 4,000-ft. test U.R. 2,075 ft.

T. G. Shaw, Tr.'s No. 1 S. P. Stroud NW¼ of G. Newton Sur., Abst. 128 Drlg. 1,195 ft.

A. G. Swanson No. 1 Veale-Frost, Sec 37, Blk. 8, T.P. Sur. Drlg. 3,630 ft.

Stonewall County

L. Clark et al's No. 1 M. R. Neatherly, Sec. 53, Blk. D, H.&T.C.R.R. Sur. Drlg 4,281 ft.

Shell Oil Co., Inc., No. 1 A. E. Smith, Sec. 143, Blk. 1, H.&T.C. Sur.; 6,000 ft. test. Drlg. 2,905 ft.

Taylor County

Sprotex's No. 1 A. L. Pittman, NW¼ Sec. 29, B.A.L. Sur. S.D. to test 1,740 ft.; S.S.O.

Crude-Oil Price Changes

In the East Hackberry and West Hackberry fields of South Louisiana, effective October 2, Stanolind Oil & Gas Co. posted a schedule beginning at below 20 gravity at 86 cents; 20-20.9 at 88 cents, with 2 cents added for each degree up to and including 34 and above at $1.16.

In the West Beaumont field, Jefferson County, Texas, effective October 2, Stanolind Oil & Gas Co. posted below 20 gravity at 86 cents; 20-20.9 at 88 cents, with 2 cents added for each degree up to and including 40 and above at $1.28.

In the Texas and Louisiana Gulf Coast, effective October 2, the Texas Co. posted below 20 gravity at 86 cents; 20-20.9 at 88 cents, adding 2 cents for each degree up to and including 34 and above at $1.16. For Duval and Mirando crudes, Texas Co. posted below 20 gravity at 86 cents; 20-20.9 at 88 cents, adding 2 cents for each degree up to and including 28-28.9° at $1.04. For Refugio, Texas, crude Texas Co. posted below 20 gravity at 91 cents; 20-20.9 at 93 cents, adding 2 cents for each degree up to and including 28-28.9 at $1.09. In Golden Meadows, South Louisiana, Texas Co. posted 24 up to 30.9° at 90 cents; 31-31.9 at 92 cents, adding 2 cents for each degree up to and including 40 and over at $1.10.

In North Texas and the Mexia (East Central Texas) district, Sinclair Prairie Oil Marketing Co., effective October 4, posted below 29 gravity at 70 cents; 29-29.9 at 81 cents, adding 2 cents for each degree up to and including 40 and above at $1.03. This is a 3-cent increase in Sinclair Prairie prices and meets the prices previously established by other major companies in the North Texas field.

In East Texas, where some companies had been paying on a gravity basis with a top price of $1.10 for 30 gravity and over, Sinclair Prairie Oil Co. changed to a flat price of $1.10 effective October 2. Cities Service Oil Co. restored its $1.10 price on October 4. Shell Oil Co., Inc., did likewise on October 5.

In the Cayuga field in eastern Texas, effective October 2, Pan American Pipe Line Co. posted 75 cents per barrel, an increase of 7 cents per barrel.

For Midland and Greendale, Michigan, grades of crude, Pure Transportation Co. effective October 9, posted $1.02 per barrel, an increase of 4½ cents and for Freeman-Redding, Michigan, crude 97 cents, an 8-cent increase.

In Michigan fields, effective October 9, Simrall Corp. of Mount Pleasant posted $1.02 for Greendale, Crystal, Porter and Wise-field crude, an increase of 4½ cents; $1 for Bentley, Buckeye, Edenville and Beaverton crude, a 5-cent increase; 97 cents for Freeman and Redding crude, a 2-cent increase, and 82 cents for West Branch and Arenac crude, an 8-cent increase.

Sohio Corp., effective October 10, posted Kent and Allegan counties, Michigan, crude $1.03, and Van Buren County crude 98 cents, each being an 8-cent increase.

In the Griffin area in Gibson County, Indiana, and Wabash County, Illinois, effective October 10, Sohio Corp. posted 95 cents per barrel for oil produced from sandstone, a 5-cent per barrel increase, and 85 cents for oil produced from limestone, a 5-cent per barrel increase.

In the Pennsylvania Grade fields of New York, Pennsylvania, southeastern Ohio and West Virginia, effective October 6, South Penn Oil Co., Tide Water Associated and other purchasers advanced crude prices 25 cents per barrel, making Allegany and Bradford crude $2.25 per barrel; Southwest Pennsylvania crude $1.90; West Virginia crude $1.84, and southeastern Ohio crude $1.80. Pennzoil Co.'s new prices range from $2.15 to $2.20 for crude in the Oil City district. Pure Oil Co. raised its West Virginia prices to $1.84.

Crude-Oil Prices

Complete crude-price schedules are now being published in the first issue of each month. The last complete schedule was published in the October 5 issue. All changes in crude-oil price schedules will be published completely in the first issue following the announcement of the changes. Following are representative crude-price schedules in barrels (42 gal.):

East Texas	$1.10
Conroe	1.27
Tepetate, La.	1.03
Smackover, Ark., heavy	.73
Illinois basin	1.05
Pecos County, Tex.	.78
Lance Creek, Wyo.	.77
Bradford, Pa.	2.25

Gravity Schedule

Top prices include all gravities above grades designated and low prices include all gravities below grades designated:

	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Texas
14-14.9	$.80	...	...
15-15.9	.80	...	...
16-16.9	.80	...	...
17-17.9	.80	...	...
18-18.9	.80	...	...
19-19.9	.82	...	$.86
20-20.9	.85	$.70	.88
21-21.9	.88	.72	.90
22-22.9	.92	.74	.92
23-23.9	.95	.76	.94
24-24.9	.99	.78	.96
25-25.9	1.03	.80	.98
26-26.9	1.06	.82	1.00
27-27.9	1.10	.84	1.02
28-28.9	1.14	.86	1.04
29-29.9	1.17	.88	1.06
30-30.9	1.21	.90	1.08
31-31.9	...	.92	1.10
32-32.9	...	.94	1.12
33-33.9	...	.96	1.14
34-34.9	...	.98	1.16
35-35.9	...	1.00	1.18
36-36.9	...	1.02	1.20
37-37.9	...	1.04	1.22
38-38.9	...	1.06	1.24
39-39.9	...	1.08	1.26
40-40.9	...	1.10	1.28

Analysis of Refining Costs Presented by R. E. Wilson

ROBERT E. WILSON, president of Pan American Petroleum & Transport Co., presented to the T.N.E.C. at Washington last week an extensive statement dealing with the costs of refining from which the following extracts are taken:

With the large differences which exist in the kind of crude handled, the variety of products made, the size of the refinery, the cost of fuel etc., it would be meaningless even if it were possible, to give an average figure for the cost of refining, either for present or past conditions. It is, however, possible to estimate with fair accuracy the approximate costs under present conditions of three modern refineries which might be built in three different typical locations and thus show how present-day refining costs compare with other elements in the cost of finished products at different locations. Of course estimates of this sort can be made only by making numerous assumptions, but the effort has been to approximate actual possibilities as of June 1, 1939, in various localities. The sizes and locations assumed for the three plants are as follows:

(1) A Mid-Continent refinery of 5,000-bbl. daily capacity, located close to a large crude field, with only a gathering system required to get typical Mid-Continent crude to the refinery.

(2) A Gulf Coast refinery of 15,000-bbl daily capacity operating on East Texas crude, transported thereto by pipe line.

(3) A refinery in the Chicago district of 60,000-bbl. daily capacity, operating on Mid-Continent crude transported thereto by pipe line.

In order to simplify the comparisons and diminish the number of variables, it is further assumed that each of these three refineries uses modern combination cracking units of efficient designs for a given size and that each refinery makes the same yield of products, namely, 47 per cent gasoline, 6 per cent kerosene, 14 per cent distillate fuel oil, and 25 per cent residual fuel oil.

These yields are fairly typical of refineries which do not make lubricants or other special products. Naturally refineries which made such special would have substantially higher investment and operating costs.

It will be noted that the assumed yields of products total 92 per cent rather than 100 per cent. Most of the balance is gas produced in the cracking process and used largely or entirely as refinery fuel, particularly if the refinery makes its own power.

For the three plants described above the estimated costs per barrel of crude would be approximately as shown in Table 1.

It must be emphasized that the costs, shown in Table 1, by no means represent average refining costs, but are estimated refining costs in first-class, modern combination units (not involving the use of catalysts) and before the period of heavy repair charges.

In the above table, the item of miscellaneous charges includes a number of small and rather variable factors which should be explained. One element of these charges is the cost of purchased fuel. In general the hypothetical refineries, involving as they do substantial cracking operations, but no polymerization plant or lubricating-oil plant, would be able to operate very largely on their own byproduct gas produced by cracking. In the above table the cost of this refinery gas is really included in the form of the cost of that part of the crude which is unavoidably converted into gas in the cracking operation; hence no additional item need be included to cover the cost of this part of the fuel. However, the smaller refinery would probably require slightly more fuel than its normal production of refinery gas and all refineries composed of large units need to purchase some outside fuel because the units must be shut down for cleaning some 10 to 12 per cent of the time. The cost of this purchased fuel is quite variable depending upon location and conditions. Sometimes natural gas is available at very low cost, whereas in other cases it may be necessary to burn residual fuel oil worth several times as much per heat unit. It is accordingly difficult to set a definite figure for this purchased fuel, though, in general, the extra fuel at the Chicago location would cost more than at a Mid-Continent or a Gulf Coast location. On the other hand, the larger the refinery and the more units it comprises the smaller the amount of outside fuel which would have to be purchased, assuming the refining operations to be generally similar.

Because of the above-mentioned variables and also because of variations in the way refinery gas is charged into the operation, it is desirable to report and compare refinery operating costs "ex fuel" as the item is set forth in Table 1, and then to have a separate item for refinery fuel with appropriate explanations.

An important item which is intended to be included in the "miscellaneous charges" is the rather uncertain item of obsolescence.

Product-Cost Accounting

Many companies make no serious attempt at product-cost accounting, except to use some simple method for inventory valuation. The problem is quite similar to the problem of determining the cost of a pound of sirloin steak, given the cost of buying, killing and dressing a whole beef. To allocate the cost of crude and cost of refining equally among all the products obviously will give identical cost figures per gallon for products whose commercial value is quite different; furthermore, to charge kerosene or gas oil with the cost of cracking is illogical, but in operating a combination skimming and cracking unit, it is practically impossible to segregate the cost of distilling and the cost of cracking. For these reasons this method, while very simple, is seldom, if ever, used in a serious effort to determine gasoline costs.

Some have attempted to solve the problem of determining gasoline cost by dividing the cost of the crude and the cost of all refining operations among the various products in proportion to their average refinery selling prices. This method, known as the sales value allocation method, in effect assumed that the same margin of profit (or loss) is made on each product from crude. While this method is simple and has some obvious advantages, this allocation of costs is almost as arbitrary as an equal division, and gasoline costs thus determined change every time the refinery sales price of gasoline, or of any other product, changes. This is referred to as Method 1.

Another method, hereinafter referred to as Method 2, or the byproduct method, calculates gasoline costs by deducting from the total cost of refining a barrel of crude, the amount of money realized at the refinery on all the products except gasoline. This, of course, means that the gasoline cost gets the benefit of any profits arising from the sale of other products, or is penalized if they are sold at a loss. Since gasoline constitutes only about half of the total liquid products made by the average refinery, this method does not appear to be entirely logical, and it also gives a gasoline cost which varies with the realization obtained on every byproduct.

A somewhat similar method of attack which overcomes some of the foregoing objections to the byproduct method is to credit only the heavy fuel oil on the basis of actual realizations, and to credit the intermediate distillates (such as kerosene and distillate fuel before the finishing operations) at their "gasoline value" or "replacement value." This "gasoline value" or "replacement value" is fundamentally the value of these stocks as substitutes for crude, because they may, by cracking, be converted into additional gasoline and heavy fuel oil. This method of accounting (referred to as Method 3) is somewhat more complicated, because it necessitates calculating the costs and

TABLE 1

Location of refinery—	Mid-Continent	Gulf Coast	Chicago dist.
Size of refinery, bbl. crude capacity per calendar day	5,000	15,000	60,000
Estimated capital investment	$2,000,000	$5,000,000	$16,000,000
Kind of crude run	Mid-Continent	East Texas	Mid-Continent
Gravity of crude, °A.P.I.	36.0-36.9	38.0-38.9	36.0-36.9
Field price of crude	$1.02	$1.10	$1.02
Gathering charge	.05	.05	.05
Pipe-line rate to refinery	....	.125	.345
Direct refinery operating expense (not including fuel)	.16	.11	.08
Taxes, overhead, insurance, etc.	.04	.035	.03
Depreciation (not incl. obsolescence) at average rate of 7 per cent	.077	.064	.051
Miscellaneous charges (see discussion)	.06	.05	.04
Total cost per barrel crude processed	$1.407	$1.534	$1.616
Total cost per barrel of products	1.529	1.667	1.757

TABLE 2—ESTIMATED GASOLINE COSTS FOR THREE HYPOTHETICAL REFINERIES

Method of calculating gasoline costs—	Mid-Continent refinery 5,000 bbl. cap.	Gulf Coast refinery 15,000 bbl. cap.	Chicago district refinery 60,000 bbl. cap.
1—Sales value allocation method	$.0511	$.0537	$.0548
2—Deducting realizations on all byproducts	.0531	.0548	.0473
3—Deducting realization on heavy fuel and "crude equivalent" values of intermediate products	.0549	.0543	.0551
Market price gasoline at refinery location June 1, 1939	$.04625	$.05125	$.07015

The assumed market prices of the various products at the different locations were in general taken from the low of Platt's Oilgram as of June 1, 1939, and were as follows:

Price basis	Low of mid-western tank-car market, Group 3 basis	Low of Gulf Coast bulk market	Low of mid-western tank-car market, Group 3, plus railway freight to Chicago: Railway freight to Chicago	Low of mid-western tank-car market, Group 3, plus railway freight to Chicago: Chicago price	*Less ¼ cent to cover switching charge from refinery to Chicago points
Gasoline, 70 octane ($/gal.)	$.04625	$.05125	$.0264	$.07265	$.07015
Kerosene ($/gal.)	.0350	.0350	.0264	.0614	.0589
No. 2 distillate fuel oil ($/gal.)	.03125	.0300	.0237	.05495	.05245
Bunker C ($/bbl.)	....	.75	....	....	....
No. 6 fuel oil ($/bbl.)	.35	....	....	....	*.8988

*Chicago price for No. 6 fuel oil is approximate actual price realized at refinery as the Group 3 plus freight calculation used does not apply to this product.

yields involved in cracking each intermediate distillate stock, but it affords a desirable method of determining whether or not such stocks should be refined and sold at prevailing market prices or should be cracked as substitutes for crude. The costs of the refined distillates (kerosene, distillate fuels, lubricating oils, etc.) are of course figured by adding all refining and finishing costs for the various products to the above-mentioned "gasoline value" of the raw distillates.

Gasoline costs determined by this method do not fluctuate with the selling prices of the intermediate distillates, as the basic factors are only the cost of crude, the cost of refining and the realization on residual fuel. The gasoline value of the distillate does, however, depend on the kind of equipment available in a given refinery for cracking them into gasoline and fuel oil. This method of gasoline cost calculation is therefore likely to vary more between one refinery and another than will some of the other methods.

Gasoline Costs

These three methods give gasoline costs which are generally similar as long as all product prices are fairly closely in line with their "gasoline value," in which case the true gasoline costs for a given refinery may be fairly well approximated. In other cases the costs calculated by the different methods vary over a considerable range and no one can say definitely that one cost is right and another wrong as they are all based on certain more or less arbitrary assumptions as to the allocation of costs byproduct credits.

Gasoline costs calculated by Methods 1, 2, and 3, for each of the three refineries above described, are as shown in Table 2.

It must be emphasized that the realization situation of any large refinery located at an interior point is different from that of a Mid-Continent refinery or a Gulf Coast refinery, because the quoted prices for the latter two locations approximate the prices which can actually be realized for shipments to a wide variety of points outside the refining district, whereas the Chicago price figures apply only to shipments into Chicago proper, and any refinery of 60,000 bbl. capacity, or even half that size, would have to ship its products over a much wider area, in most of which the prices, while somewhat above Chicago, would not be enough higher to cover all transportation costs. In general the farther the refinery ships out of Chicago the less freight advantage it enjoys over direct shipments from Mid-Continent refineries or from other important refining areas, such as those in central Illinois and Michigan, and competition with these other areas naturally reduces the average realization f.o.b. refinery.

On the other hand an interior refinery must ship into these less-attractive areas if it is to maintain the advantage of large refinery runs, and have its brand generally available to the public throughout a reasonable territory. For these reasons it is not possible to arrive in any simple way at the average profit margin of a refinery located at an interior point. Of course the same considerations apply to Mid-Continent and Gulf Coast refineries if an attempt is made to ship their gasoline outside of the normal trade channels and into other competitive areas.

No discussion of refinery prices can be complete without discussing their relationship to crude prices, since crude prices are such a large factor in gasoline costs. In an endeavor to set forth a relationship, it has been common practice to use the ratio between the price of 36° Mid-Continent crude per barrel and the Group 3 price of gasoline per gallon. In N.R.A. days it was pointed out that this relationship had formerly averaged in the neighborhood of 18.5 to 1; accordingly it was assumed that this was a more or less normal relationship, and one which would assure the refiner a reasonable profit and the producer a reasonable share in the refinery realization. However, it should be clear from previous discussion that no such simple relationship can be really significant, because it does not take into account such variables as transportation costs, refining costs, the yields of various products, and particularly the realization on other products obtained from crude. Depending on these other variables, it is quite possible for refiners to make money on a ratio as high as 20 to 1, or to lose money on a ratio as low as 17 to 1, which is exactly the reverse of what the proponents of this formula would assume. A ratio which would be really significant and which would indicate whether or not the refiner was making an overall profit would be the more complex ratio:

$$\frac{\text{Price of crude} + \text{Transportation costs} + \text{Refining costs} - \text{Realization on all other products}}{\text{Price of gasoline} \times \text{Yield of gasoline}}$$

If this ratio equalled unity it would mean a break-even basis for the refiner—higher ratios indicating losses, and lower ratios profits.

In studying the above, it will be noted that if the realization on all other products happened to be equal to, and hence cancel out, the sum of the refining and transportation costs, and if the yield of gasoline happened to be just 18.5 gal. per barrel, this formula would indicate that an 18.5 ratio between crude price and gasoline price would just permit the refiner to break even. However, such a combination of circumstances has probably never occurred, though it has occasionally been approximated.

Whatever the standard of comparison, it is clear that the ratio of crude price to gasoline price was higher (and hence the refining margin probably less) in 1938 than in any previous year. This situation was in part caused by excessive inventories of gasoline built up in the latter part of 1937.

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Thompson Withstands Grilling

COL. ERNEST O. THOMPSON, chairman of the Interstate Oil Compact Commission and member of the Texas Railroad Commission, was subjected to a grilling cross-examination on the price control implications of proration. The subtle questioning of Colonel Thompson by the Department of Justice attorneys serving as committee counsel explained the mention by Chairman O'Mahoney that "the hearing is a committee hearing and in no sense is a Department of Justice hearing, and neither assumes responsibilities for statements made by witnesses, nor of statements made by the chairman, or any of the committee's staff."

Colonel Thompson was interrogated regarding his telegraphic invitation to the governors of Illinois and Louisiana to attend a meeting of the oil compact commission at Oklahoma City last August soon after the August 11 reduction of 20 cents a barrel in the price of crude. This was followed by the 2-week shutdown. Setting their trap for the colonel, committee counsel asked the witness whether he was aware that Article 5 of joint resolution of Congress authorizing the Interstate Oil Compact Commission provides that it must not be the purpose thereunder to fix prices.

The witness admitted that such was the law, whereupon counsel flashed a clipping containing the colonel's telegram to the nonproration states, and shot the question what he meant by the reference to the "unwarranted cut" in the price of crude.

Colonel Thompson explained they had been trying to reduce the stocks of crude aboveground and that "when the stocks were low and the demand was high it did not seem fair to cut the price."

Senator O'Mahoney asked whether the price of crude in Texas "is fixed by the natural law of supply and demand or arbitrary pressure?" Colonel Thompson replied that storage supplies were at the lowest point in 18 years and that to him it looked like "somebody's deliberate attempt to fill empty storage for oil."

Senator O'Mahoney observed in this connection that "it does appear that price has something to do with the operation of proration in Texas." Colonel Thompson replied: "To the extent of seeing that the little stripper wells in Texas are not put out of business."

"The question of price is of tremendous importance" and "we have no hostile attitude," Senator O'Mahoney declared. "It appears from your testimony that you have seized the opportunity to control oil at a time when the price was low. As head of the Interstate Oil Compact Commission are you of the opinion that government should so interfere with production control so as to stabilize price as well as conserving a natural resource?" Colonel Thompson replied: "As an incident of proration you will affect price. Regulatory authorities have the duty of seeing that the restriction does not put any producers out of business."

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Leases Challenged by R. C. Knox

THE situation between landowners and companies leasing oil and gas lands was dicussed by Robert C. Knox, El Dorado, Ark., lawyer, who stressed that the extension of the exploratory term to 10 years vitiated the very essence of an oil and gas lease so far as an individual owner is concerned since it is their desire usually to have exploration and production proceed with diligence.

Mr. Knox said extension of the exploratory period and the placing of greater burdens upon the landowner upon the failure of a lessee to develop a property are the two changes which control the time and rate of development of newly discovered oil-bearing structures.

Chairman O'Mahoney interposed: "Doesn't it illustrate the difficulty in our national economy which an individual, a natural person, encounters in dealing with corporations?" "Yes," said Mr. Knox.

"There isn't much the Government can do there?" asked the senator. "Not much," replied Mr. Knox; "perhaps some government agency (the Bureau of Mines) could promulgate a reasonable form of oil and gas lease so landowners in new territory would be advised." To this Senator O'Mahoney replied that the federal Government had no such authority.

Congressman Williams asked Mr. Knox whether "the large companies have acquired leases and are using them to tie up new reserves." "There is strong evidence of that fact; it is not reasonable to believe that with the many structures already outlined that they will test all in the 10 years allowed because they cannot drill a discovery well upon each parcel," the witness replied.

Personal Paragraphs

JACK I. LAUDERMILK, petroleum engineer for Gulf Oil Corp. in Seminole, Okla., has resigned to join the faculty of the University of Texas in Austin, taking a position as instructor in petroleum engineering. Before moving to Seminole Mr. Laudermilk was located in the Tulsa office of the Gulf. He graduated from the University of Oklahoma in 1934 and has had extensive practical experience in the oil fields of the Mid-Continent.

H. R. CULLEN, president of Quintana Petroleum Co., Houston, Tex., returned last week from an extended trip to New York.

E. O. PATTERSON, veteran attorney for Stanolind Oil & Gas Co. in Tulsa, closed his active service for that organization last week, having reached the age of retirement.

GEORGE FIRESTONE, tool pusher for Attock Oil Co., Punjab, India, and his brother, TIM FIRESTONE, driller for Burmah Oil Co., are spending their vacations in Los Angeles, Calif.

J. COLLIER HURLEY, president of Grace Oil Co., Houston, Tex., and Mrs. Hurley are making a pleasure trip of several weeks through the East. Following a short stay in Hot Springs, Va., they will visit Washington, D. C., New York and Pittsburgh, Pa.

WALLACE C. THOMPSON, geologist for General Crude Oil Co., Houston, Tex., was elected president of the Houston Geological Society; CARLTON D. SPEED, JR., Speed Oil Co., vice president; OLIN G. BELL, Humble Oil & Refining Co., secretary, and A. P. ALLISON, treasurer.

C. D. GEORGE, scout for Texas Co. in the West Central Texas district, has been reelected to serve his third year as "kingfish" president of the district scout association. J. G. ROWE, Humble Oil & Refining Co., was renamed secretary-treasurer and JOE CLINGAN, Shell Oil Co., Inc., was made chairman of the executive committee.

J. FRENCH ROBINSON, president of Peoples Natural Gas Co., Pittsburgh, Pa., gave the principal talk at the West Virginia University football rally in the William Penn Hotel, Pittsburgh, October 6, the night before the West Virginia-Pitt game.

J. R. POSEY, superintendent of the producing department of Magnolia Petroleum Co., Dallas, Tex.; R. D. MYERS, superintendent of the drilling department; G. E. COX, superintendent of the natural gas, natural gasoline, and carbon-black departments; and EARL CHASE, chief clerk, all departments, are now located in the gasoline and carbon-black department building.

THOMAS HUGHES, foreman for Texas Corp. at Lockport, Ill., breathed a sigh of relief when he stepped from a United Air Lines plane at the Chicago Municipal Airport. Mr. Hughes was on vacation in Europe when he was caught by the outbreak of the war and promptly joined the scramble to obtain passage back to the United States. His efforts to get aboard the Queen Mary and other liners right after the start of the war met with failure, and he was held in England until he got a reservation on the second trip of the Manhattan. Mr. Hughes was in both France and England, and his greatest impression of the war countries was the detached manner of the people. There was none of the hysteria he expected to see, he said. Aside from the fact that gas masks had become standard equipment for civilians and that cities were blacked out at night, there was little indication that either country was at war.

C. E. DAVIS, manager of production for Bahrein Petroleum Co., and GAVIN WITHERSPOON, chief petroleum engineer for California Arabian Standard Oil Co., left San Francisco by Clipper recently for Hong Kong. From there they hoped to get transportation to Bahrein Island.

LEE MINTER, petroleum engineer with Belmont Quadrangle Drilling Co., Bradford, Pa., is including Oklahoma, Louisiana, Texas, and Mississippi in his vacation trip.

S. F. PRATT, for the past 3 years European manager for the Pennsylvania Grade Crude Oil Association, has been named assistant secretary to succeed S. A. HARTWELL, JR., resigned.

JOSEPH C. BERGERE, secretary of Great Western Drilling Co., has returned to his office in Los Angeles, Calif., following a tour of New Mexico, where the company is drilling several wells.

C. W. HUBMAN, chief geologist of Colombian Petroleum Co., Cucata, Colombia, left New York last week for Dallas and Houston, Tex.; Boulder, Colo., and the Pacific Coast. He had just arrived for a 3-month vacation.

J. M. WEST, chairman of the board of the West Production Co., Houston, Tex., has been elected a director of the Dallas Federal Reserve Bank. He succeeds HARRY C. WEISS, president of Humble Oil & Refining Co., who resigned.

RALPH O. DIETLER, vice president of Stanolind Oil Purchasing Co., Tulsa, was in St. John's Hospital, that city, this week, with torn ligaments of one leg, contusions, and abrasions about the head and body suffered in an automobile accident last Saturday while he was driving to Fayetteville, Ark., to attend the T.C.U.-Arkansas University football game.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

A company with Oklahoma City headquarters is advertising the sale of $61,000,000 of capital stock. The company claims to own 60 acres in the Nowata field, Oklahoma, which represents 1 acre for each $1,000,000 capital stock. It has done no drilling.

The Oklahoma Corporation Commission has forbidden the shooting of oil wells in the state as a help in keeping flush production down in these days of oversupply.

The Alice Katherine Oil Co. opens the Yale pool in Payne County, Oklahoma, with a 150-bbl. well in Section 7-19-6.

Over 11,355,995 bbl. of crude is in steel and earthern storage, and 824,650 bbl. in wooden lease storage, in the Cushing, Oklahoma, district. Stocks increased over 2,000,000 bbl. in 1 month.

20 YEARS AGO

Henry Argue, pioneer oil man in Canada and the eastern United States, dies in Buffalo, N. Y.

David White, chief geologist of the U. S. Bureau of Mines, estimates that the known reserves of oil in the ground in the United States at the beginning of 1919 were 6,740,000,000 bbl. Up to that time 4,598,144,000 bbl. of oil had been removed from the ground.

10 YEARS AGO

John C. Looker, of Bradford, Pa., is chosen Grand Old Man of the oil industry at the International Petroleum Exposition in Tulsa.

Oklahoma Corporation Commission clamps down a proration and curtailment order on the Greater Seminole district and Logan County fields.

The old Humble pool in Harris County, Texas, surprises Gulf Coast operators with a 7,000-bbl. well, drilled by the Texas Co.

URBAN B. HUGHES, consulting geologist, has opened offices in Jackson, Miss.

RALPH FILMORE, one of the geological staff of Anderson-Prichard Oil Corp., Oklahoma City, Okla., has matriculated at the University of Oklahoma for special work in geology.

PAUL E. LEHR, engineer in the exploitation department of Shell Oil Co., Inc., in Los Angeles, Calif., has been appointed district superintendent and will maintain offices in the Shell Building in Los Angeles.

CARL S. SHOULTS, consulting geologist of Abilene, Tex., has been elected president of the Abilene Geological Society. Other new officers are K. N. NOWELS, vice president, and H. C. DANIELS, secretary-treasurer.

MARVIN LEE, geologist, who with HARVEY ELWELL, of Wichita, Kans., opened the play that made the Forest City basin in northern Missouri the center of an active leasing campaign, has returned to Wichita after 14 months' absence.

CHARLES R. HOUSSIERRE, JR., is setting up his laboratory under the auspices of the University of Texas bureau of engineering research, Austin, to work on problems presented by treacherous heaving-shale formations of Texas Gulf Coast oil fields. Going to Texas from the Massachusetts Institute of Technology, where he received his master's degree, Mr. Houssierre is the first man to hold the bureau's fellowship for work on the shale problem. H. H. POWER, professor of petroleum engineering, who began experimentation on the shale problem, heads a committee which will supervise this research work.

Light From the Files

Old files of Magnolia Petroleum Co. contain a "work assignment sheet," dated March 23, 1915, which may throw light on how D. A. Little, president, came to reach that post. This venerable work-sheet assigned to him the job of "bringing up analysis books for 1914 covering refinery and pipe lines, sales and purchases, etc." And there is a reminder for all members of the staff that when a man had completed a job he should "report to the chief so that additional duties can be assigned."

D. A. LITTLE

There is an office tradition that young Little never tried to work in a little vacation between the end of one job and the beginning of another or to prolong needlessly any task. He reported to his boss with refreshing punctuality for the next assignment. Magnolia had higher places for men who did that. So this work-defying employe, who had left a clerkship in the postoffice at Corsicana, Tex., to join Magnolia as a bookkeeper, soon found himself on the way up. He became assistant treasurer. In 1928 he was transferred to the executive offices, where he was advanced to vice president. He was serving in that capacity and as assistant general manager when he was elected president in March 1933.

Mr. Little was born and reared on a farm in Navarro County, Texas. He saw the early oil development in and around Corsicana and soon came to have an important part in an industry that from the first engaged his lively interest.

GORDON ASBURY, scout for Atlantic Refining Co., Midland, Tex., is officiating in spare time at high-school football games in West Texas this fall.

W. H. LOCKE, vice president of United Natural Gas Co., Oil City, Pa., since 1928, has been elected president of the Pennsylvania Gas Co. and the Pennsylvania Oil Co., both of Warren, Pa., to succeed the late B. H. McLachlan.

J. EDGAR PEW, vice president of Sun Oil Co., was in Dallas, Tex., from Philadelphia, Pa., October 10 for the annual picnic of Sun Oil Co. employes. The outing was held at Glen Lakes Country Club, and the Dallas offices of the company were closed for the occasion.

R. L. DENTON, formerly in the Kilgore, Tex., offices of Magnolia Petroleum Co., has been moved to Tyler to become pipe-line scout for the company in the East Texas district. He fills the vacancy left by G. R. KENNEDY, who resigned to enter the oil industry as an independent.

J. R. D. EDDY, director of industrial education in Texas, addressed the East Texas chapter of the A.P.I. October 10, on vocational training at the first meeting of the fall in Kilgore, Tex. WOODY ERWIN, of the National Tank Co., discussed the conservation of crude-oil gravity in the field.

C. L. HEROLD, district geologist for Shell Oil Co., Inc., in South Louisiana, with his office in Houston, Tex., visited Lake Charles, Baton Rouge and New Orleans, La., recently. R. T. JAMESON is the new district land agent for Shell in Baton Rouge, having been transferred from a similar post in Shreveport, La.

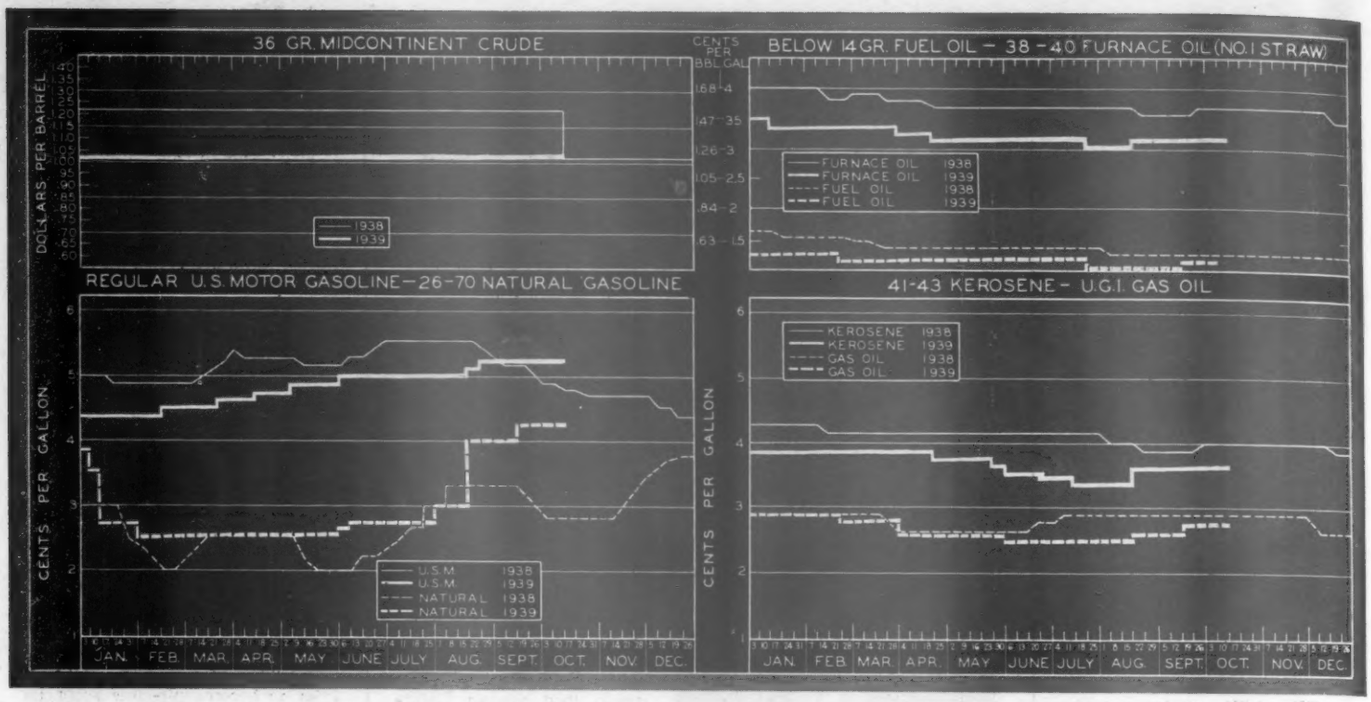
Shifts: EDWARD A. HALL, geologist Long Beach Oil Development Co., from Sonora, Calif., to Berkeley, Calif.; JOHN A. PEARSON, engineer Atlantic Refining Co., from Sonora, Tex., to Ozona, Tex.; H. E. GRANBERRY, engineer Magnolia Petroleum Co., from Hoisington, Kans., to Jackson, Miss.; C. A. WALLACE, Dyer Drilling Co., from Eunice, La., to Tivoli, Tex.; ARMAND F. HOEHLE, superintendent Equitable Gas Co., from Finleyville, Pa., to Large, Pa.; E. H. GRASER, vice president Ellmag Oil Corp., from Tampico, Mexico, to Seguin, Tex.; J. O. GARRETT, engineer Big Lake Oil Co., from Corpus Christi, Tex., to Agua Dulce, Tex.; P. A. COLE, engineer Cities Service Oil Co., from Gladewater, Tex., to Russell, Kans.; FRANCIS G. PHILLIPS, engineer E. I. Phillips & Co., from Houston, Tex., to Iowa, La.; RICHARD FREED, geologist Texas Co., from Midland, Tex., to Jasper, Ala.; GEORGE S. ANDERSON, superintendent Signal Hill Oil Corp., from Centralia, Ill., to Evansville, Ind.; J. B. BURNETT, Standard Oil Co. (New Jersey), from Larchmont, N. Y., to Melbourne, Australia; CLIFFORD MOOERS, president Shasta Oil Co., from Seattle, Wash., to Houston, Tex.; EUGENE W. GILL, engineer Phillips Petroleum Co., from Bartlesville, Okla., to Okmulgee, Okla. ARTHUR C. BECKNER, engineer Oklahoma Pipe Line Co., from Wilson, Okla., to Wewoka, Okla.; LEROY WINN, engineer Oklahoma Pipe Line Co., from Wilson, Okla., to Checotah, Okla.; EARL S. HILL, research engineer Stanolind Oil & Gas Co., from Tulsa to Berkeley, Calif.; W. J. PRINDLE, geologist Scientific Service Co., from Tulsa to Smithfield, Tex.

B. F. CATINARI, geologist, and JOSE MARTINEZ, production engineer, for Yacimientos Petroliferos Fiscales, Buenos Aires, Argentina, are in California studying American oil-field production methods.

JOHN HAY, for 6 years manager of Standard Oil Co. of Indiana in Montana, has been made vice president and general manager of Standard Oil Co. of Nebraska, recently acquired by the first-named company. Mr. Hay, whose headquarters formerly were in Billings, Mont., has gone to Omaha, Neb., to assume his new office. A. E. TESSEIN, who was assistant to Mr. Hay, takes the latter's place. MARK GOOD, formerly agent in Helena, Mont., succeeds Mr. Tessein.

JOHN W. VAN TINE, chosen Grand Old Man of the oil industry at the 1938 International Petroleum Exposition, and Mrs. Van Tine celebrated their sixtieth wedding anniversary September 30 at their home in Bradford, Pa. Mrs. Van Tine and members of the family received the 200 guests. Mr. Van Tine, confined to his bed for the past month, received only a few intimate friends. Mr. and Mrs. Van Tine moved to the Bradford vicinity following their marriage in Plumer, Pa., in 1879. They have 7 children, 10 grandchildren, and 2 great-grandchildren.

HOWARD S. BRYANT, formerly district geologist in Kansas for Skelly Oil Co., has been transferred from Wichita to Tulsa, where he will serve as division geologist in the area comprising Kansas, Missouri, Illinois, Indiana, and eastern Colorado. DR. R. B. RUTLEDGE, formerly staff geologist in Tulsa, is now division geologist, his territory including Oklahoma and all the region handled by the company's Houston, Tex., office. He also will have charge of all geophysical work. JOSEPH E. MORERO continues as chief geologist, but is relieved of certain details. He will administer, as before, all geological work.


36 GR. MIDCONTINENT CRUDE
DOLLARS PER BARREL
1938
1939
BELOW 14 GR. FUEL OIL – 38 – 40 FURNACE OIL (NO. 1 STRAW)
CENTS PER BBL. GAL.
FURNACE OIL 1938
FURNACE OIL 1939
FUEL OIL 1938
FUEL OIL 1939
REGULAR U.S. MOTOR GASOLINE – 26 – 70 NATURAL GASOLINE
CENTS PER GALLON
U.S.M. 1938
U.S.M. 1939
NATURAL 1938
NATURAL 1939
41-43 KEROSENE – U.G.I. GAS OIL
KEROSENE 1938
KEROSENE 1939
GAS OIL 1938
GAS OIL 1939
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Lubricants and Wax Continue to Race Ahead in Group 3 Refinery Market

By T. F. SMILEY

WITHOUT even looking around to see what the other products were doing, lubricating oils and wax raced ahead in the Group 3 refinery market this week. The lubes were up another cent. It was difficult to name the spot price for wax, for nobody had any to sell. Though nothing else was putting on as showy a performance as these two products, there was no apparent weakness anywhere, with the possible exception of low-octane gasoline.

To the cursory observer the natural-gasoline market looked spotty. Frantic appeals from the Gulf had ceased, and there was not the steady flow of material from plants that characterizes the ideal market. This change was not a sign of slackening demand, however. It was chiefly the result of disrupted transportation service to overseas and East Coast points.

Water Schedules Dislocated

Motor fuel for export or coastwise shipment is not leaving the Gulf on regular schedules on account of war conditions. Scant information is available concerning the movement of cargoes for foreign ports, but it is understood that tankers that undertake their voyage do not follow the usual ocean trails, but take roundabout routes, with the result that they are late in reaching their destinations and late in returning. This in turn creates congestion at Gulf ports and erratic movement of natural gasoline intended for overseas consumption.

Disordered shipping conditions at the Gulf also cause delay and uncertainty in tank-car movement to Gulf ports. Failure of boats to arrive as expected makes it impossible at times to unload tank cars of gasoline shipped from Oklahoma or northern Texas. The irregularities in water transportation growing out of the war are expected to be remedied in time.

The motor fuels were suffering from the same disturbed conditions at the Gulf that affected the naturals, and in addition had to contend with the seasonal decline in consumption, drouths in agricultural areas, and competition from the cheap Illinois product. In spite of this the gasoline market was described as "nothing to worry about."

Refined Oil Market Barometer

Inability, on account of war conditions, to move export and some other shipments on schedule is affecting markets, especially gasoline and naturals, but this difficulty is expected to be alleviated. Lubricating oils and wax continue as leaders in point of strength and scarcity. Drouths hinder gasoline, kerosene, and tractor-fuel sales. Warm weather retarding heating-oil movement.

MID-CONTINENT. Lubes, wax tight. Gasoline steady. Naturals strong. Light fuels firm.

EAST COAST. General market firm, but needs freer export movement. Kerosene up.

GULF COAST. Softer tone in gasolines. Kerosene tight. Neutrals firm.

CALIFORNIA. Gasoline spotty. Marketers storing heating oil. Lubricating oil soft.

PENNSYLVANIA. Lubricating oils strong, supplies limited. Gasoline steady.

CHICAGO. Gasoline steady. Heavy industrial fuel in brisk demand. Tractor fuels active.

Gallonage, which broke all precedents during the summer, promises to carry its high record through the fall.

Some of the more conservative refiners are expressing concern over heavy crude runs to stills, which are keeping the nation's stocks of gasoline at too high a level. There has been a slowing down of spot buying for export, according to reports, and it is predicted that belligerent nations in the European war will try to get their supplies on a yearly contract basis.

Drouths Affecting Sales

Lack of rain in farming regions is curtailing sales of gasoline, light distillates, kerosene, and tractor fuels. Drouths not only have slowed up work for the tractor, but have kept the family car in the garage. When it is considered that thousands of families in rural communities are affected it is realized that in the aggregate the consequences of a drouth may be distinctly unfavorable for the refiner.

Purchasers of wax met disappointment in their hunt for available material. They expressed willingness to pay 4¾ cents for 124-126 white crude scale, if they could get it, but they couldn't get it. The price has doubled in recent months.

All Mid-Continent manufacturers of bright stocks and neutrals were reported sold up. Stocks, which were ruinously excessive a few months ago, have been depleted by export demand, and further advances in quotations seem likely.

Prolonged warm weather in northern areas has retarded the seasonal requirements for heating oils, but a vigorous market is expected to set in with the advent of winter weather.

Tank-Car, Tank-Wagon Prices Advanced on North Atlantic

By H. STANLEY NORMAN

NEW YORK, Oct. 10.—Advances of a half cent per gallon in the tank-car and tank-wagon prices for gasoline in most of the North Atlantic seaboard territory were posted last week by leading marketers and distributors. The tank-car advances, modified to a quarter of a cent in some instances, extended inland to the western Pennsylvania refinery district and gave further evidence that war psychology has not run its course.

The slight recession of Gulf Coast quotations on most grades of motor fuel was considered a reaction from the first hysteria over war in Europe, although the market there held its ground last week. Tank-car and tank-wagon advances in the North Atlantic coastal territory were tardy in developing, largely because marketers wished first to observe the levels at which primary supply prices would settle. Consequently last week's advances in New York, the New England states, Pennsylvania and south into the Virginias and the Carolinas were actually a consolidation of consumer and primary markets.

The reaction noted on the Gulf Coast, consequently, was not apparent in the northeastern district. Most New York refiners and distributors are firm at 6¾ cents to 7 cents per gallon for 65-octane motor fuel, and were not anxious sellers of large volumes at those prices. One independent marketing organization, which moved its tank-car price for 65-octane motor fuel up to 7 cents per gallon, said that barge sales would be made only at higher prices, a policy adopted to discourage forward purchases when the primary markets are in a state of flux.

Compulsion to store stocks normally moving in trans-Atlantic export trade continued to plague East and Gulf coast refiners. There is a limited volume of movement in British and French boats but the risks are still too great to attract neutral tonnage into this service.

Word was received in New York last week that the French and British authorities have issued a regulation establishing maximum tanker rates to apply from the United States to ports in those countries. Presumably, but not entirely made clear by sketchy information transmitted to New York, the maximum rates can be enforced only against British and French flag boats. The rates ordered are 25 shillings (about 20 cents per barrel at the current rate of pound exchange) to England and 30 shillings to France, including insurance. In setting rates of approximately $5 per ton to England and $6 to France, including insurance, the governments of those two countries are apparently taking steps to prevent tanker owners from profiteering because of war conditions.

A new recent high for prompt coastwise movement was reported in the tanker-charter market last week. A boat was engaged for an October voyage from the Gulf Coast to north-of-Hatteras at 36 cents per barrel, fully 6 cents higher than the last previously reported charter for the same service. The prompt delivery stipulation in the charter may have been a factor in the rate, since most owners previously reported willingness to accept 30 to 32 cents for the coastwise voyage.

Fuel-oil prices remained firm in New York, although the trend is to the high of the current range and most refiners anticipate that light fuel oils will move into higher ground in the near future. Cold, damp weather in New York and New England last week stimulated consumption of both kerosene and No. 2 fuel oil. Kerosene is currently held in New York Harbor at a range of 4⅞ to 5 cents per gallon to the tank-car trade and No. 2 fuel oil is strong at 4⅝ to 4¾ cents per gallon.

The Bunker C fuel-oil price of $1.15 per barrel is unchanged although conditions in this market are firm in New York and said to be the same on the Gulf.

The last export cargo of 65-octane gasoline reported sold on the Gulf Coast spot market brought 6½ cents per gallon, but similar material for coastwise movement probably can be found for 6¼ or possibly 6⅛ cents per gallon. Prospective purchasers of higher-octane motor fuel (70-73) would probably have to pay from 6⅞ to 7 cents per gallon, although one supplier indicated willingness to accept 6¾ cents.

The wax market continued its upward movement and 4 cents per pound for scale grades in New York appeared to be the bottom of the market. Some suppliers are asking a tenth of a cent more and report limited sales at the top figure.

The Pennsylvania Grade lubricating-oil market remained unchanged with supplies strictly limited and considerable interrefinery trading and buying were reported as suppliers attempted to satisfy urgent demands of contract and regular customers.

Gulf Coast Markets

HOUSTON, Tex., Oct. 10.—Motor fuels continued the only question mark in the Gulf Coast market picture the past week. The softer tone which developed the previous week still was evident, and in some instances quotations were further shaded; but on the other hand material was not overplentiful. Coastal refiners are running the crude they can get their hands on. It is known that gasoline is backing up with continued slow export demand and shortage of available tankers, but most of the material held is in good hands, not desirous of moving in at prices substantially below the high levels recently reached.

A check of sellers by several buyers indicated that altogether there are not more than two cargoes of kerosene available anywhere on the Gulf Coast, which keeps this product in its tight position with strength of quotations maintained.

No indication is evident of any easing up of diesel and fuel oils. These products, of which there are practically none on hand not already committed, continue to be supported by heavy industrial consumption in the East, with the peak consuming season in the making.

The active demand for Mid-Continent and Pennsylvania lubricating oils continues to be reflected in Gulf Coast neutrals, which are being drawn on heavily for blending stocks maintaining prices strongly.

A. P. I. Weekly Refinery Statistics

Week Ending October 7, 1939

	Capacity reporting (per cent)	Daily crude runs (bbl.)	Total gasoline stocks	Gas oil and fuel oil stocks
East Coast	100.0	557,000	18,862,000	12,604,000
Appalachian	85.9	110,000	2,460,000	574,000
Indiana, Illinois, and Kentucky	90.2	498,000	10,897,000	6,703,000
Oklahoma, Kansas, and Missouri	81.6	263,000	5,784,000	4,604,000
Inland Texas	50.3	126,000	1,498,000	2,299,000
Texas Gulf	90.0	822,000	8,889,000	12,684,000
Louisiana Gulf	97.6	143,000	2,219,000	2,859,000
North Louisiana and Arkansas	55.0	53,000	425,000	707,000
Rocky Mountains	54.2	47,000	1,039,000	599,000
California	90.0	529,000	14,099,000	92,840,000
Total reported	86.2	3,148,000	66,172,000	136,473,000
Estimated unreported	.....	357,000	4,980,000	3,225,000
*Estimated total	.....	3,505,000	71,152,000	139,698,000
*Estimated total previous week	.....	3,560,000	71,168,000	141,130,000
*October 8, 1938	.....	3,251,000	69,129,000	151,758,000

*Bureau of Mines, currently estimated.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ending September 30, 1939	233,023,000 barrels
Week ending September 23, 1939	232,811,000 barrels
Week ending October 1, 1938	280,852,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

Tank-Wagon Changes

Standard Oil Co. of Louisiana September 30 advanced dealer tank-wagon gasoline .5 cent in Bristol.

Standard Oil Co. of New Jersey September 30 advanced consumer tank-car and dealer tank-wagon gasoline .5 cent generally throughout Virginia, West Virginia, North Carolina, and South Carolina, except that at some points in Virginia the tank-wagon price did not change. Same date, advanced consumer tank-car prices in Maryland and District of Columbia, with no change in tank-wagon prices. October 1, advanced consumer tank-car gasoline 1 cent in North Carolina.

Standard Oil Co. (Nebraska) October 5 reduced normal price structure on gasoline, kerosene, and tractor fuel throughout the state. At the same time all prices one-half cent or less below the new normal were advanced to normal.

(Continued on Next Page)

Retail Oil Markets

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms.

Prices as of October 10, 1939

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wag.	Dir.	Inc. tax	tank wag.
Chicago, Ill.	15.1	13.1	4.0	10.0
Decatur	15.1	13.6	4.0	8.5
Joliet	15.1	13.6	4.0	10.0
Peoria	15.1	13.6	4.0	10.0
Quincy	14.9	13.4	4.0	9.8
Davenport, Ia.	15.1	13.6	4.0	‡10.0
Des Moines	14.9	13.4	4.0	‡9.8
Mason City	15.3	13.8	4.0	‡10.2
Duluth, Minn.	16.9	15.4	5.0	10.8
Mankato	16.5	15.0	5.0	9.4
Minneapolis	16.5	15.0	5.0	10.4
LaCrosse, Wis.	16.5	15.0	5.0	10.4
Green Bay	16.9	15.4	5.0	10.0
Milwaukee	16.3	14.8	5.0	10.2
Detroit, Mich.	13.6	12.1	4.0	7.1
Grand Rapids	13.5	12.0	4.0	9.7
Saginaw	15.8	13.3	4.0	9.3
Evansville, Ind.	16.6	15.1	5.0	†10.5
Indianapolis	16.8	15.3	5.0	†10.7
South Bend	16.8	15.3	5.0	†10.0
Fargo, N. D.	17.7	16.2	5.0	11.6
Huron, S. D.	17.0	15.5	5.0	10.9
Kans. City, Mo.*	14.4	12.9	4.0	8.0
St. Louis*	14.7	13.2	4.0	8.0
St. Joseph	14.4	12.9	4.0	7.9
Wichita, Kans.	13.3	10.6	4.0	7.4

***State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.**

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective September 18, 1939, f.o.b. Chicago tank-wagon prices: Standard range oil, 1-99 gal., 9 cents; 100-149 gal., 8 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-149 gal., 8.25 cents; 150-399 gal., 7.25 cents; 400 gal. and over, 6.75 cents. Stanolex furnace oil, 1-149 gal., 8.25 cents; 150-399 gal., 7.25 cents; 400 gal. and over, 6.75 cents. Stanolex Grade A, 1-399 gal., 5.25 cents; 400 gal. and over, 4.25 cents. Stanolex Grade B, 1-799 gal., 5.25 cents; 800 gal. and over, 4.25 cents. Stanolex Grade C, 1-999 gal., 4.5 cents; 1,000 gal. and over, 3.5 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Tank-wag. cons'r.	Di-vided dir.	Inc. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.0	*13.0

***Includes state tax of 1 cent.**

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline			Kero.
	Cons'r. tank car	Dir. tank wag.	Inc. tax	tank wag.
Atl'tic City, N. J.	11.6	12.7	4.0	7.25
Newark	11.6	12.7	4.0	7.25
Annapolis, Md.	13.35	14.35	5.0	9.5
Baltimore	12.75	13.75	5.0	7.0
Cumberland	14.15	16.15	5.0	10.0
Wash'gton, D. C.	11.00	12.0	3.0	9.5
Danville, Va.	14.95	17.45	6.0	12.9
Norfolk	13.75	16.25	6.0	8.5
Petersburg	14.05	16.55	6.0	11.7
Richmond	14.05	16.55	6.0	10.7
Roanoke	15.25	17.75	6.0	11.0
Charles'n, W. Va.	14.55	17.05	6.0	12.6
Parkersburg	13.85	15.35	6.0	11.2
Wheeling	14.85	16.75	6.0	12.2
Charlotte, N. C.	16.90	18.40	7.0	11.8
Hickory	17.45	18.95	7.0	12.3
Mt. Airy	17.30	18.80	7.0	12.2
Raleigh	16.65	18.15	7.0	11.5
Salisbury	16.95	18.45	7.0	11.9
Charleston, S. C.	14.75	17.25	7.0	10.6
Columbia	15.60	18.10	7.0	11.5
Spartanburg	16.30	18.80	7.0	12.2

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gallons or more, consumer tank-wagon price. Single deliveries of less than 50 gallons, 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less .5 cent per gallon. The above policy also applies in South Carolina effective January 23, 1939.

Discounts for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline			Kero.
	Cons'r. tank-wag.	Net dlr.	Inc. tax	tank-wag.
Atlanta, Ga.	21.0	18.0	7.0	10.0
Augusta	20.5	17.5	7.0	8.5
Macon	21.0	18.0	7.0	10.5
Savannah	19.5	16.5	7.0	9.0
Birmingham, Ala.	21.5	18.5	8.0	9.0
Mobile	21.5	18.5	9.0	9.0
Montgomery	22.5	19.5	9.0	11.0
Jackson, Miss.	19.5	16.5	7.0	10.0
Vicksburg	19.5	16.5	7.0	9.5
Jacksonville, Fla.	19.5	16.5	8.0	8.5
Miami	20.0	17.0	8.0	8.5
Pensacola	21.5	18.5	9.0	8.5
Tampa	20.0	17.0	8.0	7.0
Lexington, Ky.	19.5	16.5	6.0	10.0
Covington	17.5	14.5	6.0	9.5
Louisville	18.5	15.5	6.0	9.0
Paducah	18.5	15.5	6.0	9.0

Price basis to tank-wagon consumers: Effective January 4, 1937; 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Cons. tank-car	Dir. tank-wag.	Inc. tax	tank-wag.
Philadelphia, Pa.	12.0	13.5	5.0	10.0
Pittsburgh	13.0	14.5	5.0	10.5
Allentown	12.5	14.0	5.0	10.5
Erie	13.0	14.5	5.0	10.0
Scranton*	13.0	14.5	5.0	10.5
Altoona	13.0	15.0	5.0	10.5
Dover, Del.	...	14.0	5.0	10.5
Wilmington	...	13.5	5.0	9.75

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon.

***Voluntary discount of 1 cent allowed to dealers only.**

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline			Kero.
	Cons. tank-car	Dir. tank-wag.	Inc. tax	tank-wag.
Albany	12.3	14.2	5.0	7.50
*Met. N. Y.:				
Manhat, Bronx	12.4	13.4	5.0	7.25
Queens, Br'klyn	12.4	13.4	5.0	7.25
Staten Island	12.4	13.4	5.0	7.25
Buffalo	13.1	14.5	5.0	7.75
Rochester	13.3	14.0	5.0	8.00
Syracuse	12.9	14.4	5.0	7.75
Boston	11.3	13.0	4.0	7.25
Portland, Me.	12.3	14.3	5.0	7.25
Manchester, N.H.	13.0	14.0	5.0	7.75
Burlington, Vt.	12.9	14.0	5.0	7.75
Springfield, Mass.	12.0	13.5	4.0	6.50
Worcester	11.9	14.5	4.0	7.75
Hartford, Conn.	11.7	13.3	4.0	7.00
New Haven	11.6	12.8	4.0	6.50
Providence, R. I.	11.3	13.3	4.0	7.00

***Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.**

Effective February 15, 1939, the company changed its commercial consumer policy in New York and New England points for tank-wagon delivery to the following: Annual purchases 10,000 gallons and under, tankcar price plus 2 cents per gallon; annual purchases 10,000 gallons up to 50,000 gallons, tankcar price plus 1.5 cents per gallon; annual purchases 50,000 to 200,000 gallons, tankcar price plus 1 cent per gallon; annual purchases 200,000 gallons and over, tankcar price plus one-half cent per gallon. Private consumers pay undivided dealer price, plus 2 cents per gallon. Private consumers receiving full compartment deliveries of at least 200 gallons receive a discount of one-half cent per gallon.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline			Kero.
	Tank-truck	Serv. sta.	Inc. tax	tank wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	10.0
Fresno, Calif.	18.5	19.5	4.0	12.5
Phoenix, Ariz.	20.0	21.0	6.0	*17.5
Reno, Nev.	20.5	21.5	5.0	13.5
Portland, Ore.	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	†13.75
Spokane	21.5	22.5	6.0	†16.75
Tacoma	20.0	21.0	6.0	†13.75

***Includes 5-cent state tax. †Includes .25-cent state tax.**

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

March 18, 1939, split dealer discount was canceled.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline			Kero.
	Tank-wag.	Dir.	Incl. tax	tank-wag.
Denver, Colo.	15.5	...	5.0	11.5
Grand Junction	18.5	...	5.0	15.0
Pueblo	16.0	...	5.0	9.0
Casper, Wyo.	17.5	...	5.0	11.5
Cheyenne	15.5	...	5.0	13.0
Billings, Mont.	18.5	...	6.0	13.0
Butte	20.0	...	6.0	15.5
Great Falls	19.5	...	6.0	15.5
Helena	20.5	...	6.0	15.5
Salt Lake, Utah	17.5	17.5	5.0	16.0
Boise, Idaho	20.6	20.6	6.0	18.0
Twin Falls	21.1	21.1	6.0	18.0
Albu'que, N. M.	17.0	17.0	6.5	10.0
Roswell	15.5	15.5	6.5	8.0
Santa Fe	17.5	17.5	6.5	10.0

***Includes city tax of .5 cent. †Includes state tax of 1 mill.**

Tank-wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline			Kero.
	Cons. tank-car	Dir. tank-wag.	Inc. tax	tank-wag.
New Orleans, La.	15.25	17.75	8.0	†11.0
Baton Rouge	15.25	17.75	8.0	†10.5
Alexandria	15.25	17.75	8.0	†12.5
Lafayette	15.00	18.00	8.0	†11.0
Lake Charles	15.25	17.75	8.0	†12.5
Shreveport	14.00	16.50	8.0	†11.0
Knoxville, Tenn.	18.50	21.00	8.0	14.5
Memphis	16.50	19.00	8.0	11.0
Chattanooga	18.00	20.00	8.0	12.0
Nashville	17.50	20.00	8.0	11.0
Bristol	18.75	20.00	8.0	13.0

Essolene at dealer price less .5 cent per gallon to undivided dealers.

†Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon; 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Nebraska

STANDARD OIL CO. (NEBRASKA)

	Gasoline			Kero.
	Tank wag.	Dlr.	Inc. tax	tank wag.
Omaha	16.9	15.4	6.0	9.3
McCook	17.0	16.2	6.0	9.0
Norfolk	17.3	15.8	6.0	9.5
North Platte	17.8	16.3	6.0	10.7
Scottsbluff	18.5	15.5	6.0	11.4

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline			Kero.
	Tnk.-wg. dlr.	Includes tax		tank wag.
Texarkana, Ark.	14.0	5.0		8.0
Fort Smith	15.5	5.0		7.5
Little Rock	17.25	7.5		8.0
Muskogee, Okla.	13.0	5.0		7.0
Oklahoma City	13.0	5.0		6.5
Tulsa	13.0	5.0		7.0

The tank-wagon price is the price to all classes of trade.

Texas

	Gasoline			Kero.
	Tank wag.	Serv. sta.	Inc. tax	tank wag.
Dallas, Tex.	14.0	18.0	5.0	7.0
Fort Worth	15.0	19.0	5.0	8.0
Houston	14.0	18.0	5.0	8.0
San Antonio	14.0	18.0	5.0	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

***Prices include 2-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.**

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank wag.	Inc. tax	Kero tank wag.
Halifax, N. S.	24.0	10.0	18.0
St. John, N. B.	24.0	10.0	18.0
Montreal, Que.	22.5	8.0	15.0
Toronto, Ont.	23.5	8.0	16.0
Hamilton, Ont.	23.5	8.0	16.0
Winnipeg, Man.	26.5	7.0	20.8
Brandon, Man.	28.0	7.0	22.9
Regina, Sask.	26.0	7.0	23.0
Saskatoon, Sask.	28.3	7.0	24.9
Edmonton, Alta.	19.4	7.0	21.4
Calgary, Alta.	23.5	7.0	19.0
Vancouver, B. C.	23.0	7.0	23.0

Tank-Wagon Changes

(Continued from Preceding Page)

All other subnormal prices were advanced at least one-half cent a gallon. In accordance with this change tank-wagon and dealer gasoline was reduced .6 cent in Omaha and .5 cent in North Platte and Scottsbluff; tank-wagon gasoline was advanced .3 cent and dealer gasoline was reduced .1 cent in Norfolk; tank-wagon gasoline was advanced .5 cent and dealer gasoline .3 cent in McCook. Tank-wagon kerosene was advanced .5 cent in Norfolk and .4 cent in Scottsbluff; reduced 1 cent in Omaha. .4 cent in North Platte.

Standard Oil Co. (Indiana) September 29 reduced tank-wagon kerosene 1.5 cents in Decatur.

Socony-Vacuum Oil Co., Inc., October 4 advanced tank-car gasoline .4 cent in Albany and .6 cent in Buffalo, .5 cent in metropolitan New York, Rochester, Syracuse, Boston, Portland, Manchester, Burlington, Springfield, Worcester, Hartford, New Haven, and Providence; advanced tank wagon 1 cent in Buffalo and Springfield; .5 cent in Portland, Manchester, and Providence; 1.5 cents in Worcester.

Standard Oil Co. of Ohio October 7 advanced tank-wagon consumer and divided dealer gasoline .5 cent.

Prices of Refined Products

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of October 10, 1939

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 octane and below		.04½
63-66 octane	.04¾	.04⅞
67-69 octane	.04⅞	.05⅛
70-72 octane (regular)	.05¼	.05⅝
60-62 400 grades:		
62 octane and below	.04½	.04⅝
63-66 octane	.04¾	.04⅞
67-69 octane	.04⅞	.05⅛
70-72 octane (regular)	.05¼	.05⅝
64-66 375	.04⅝	.04¾
68-70 360	.05	.05¼

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below		.04½
63-66 octane	.04¾	.04⅞
67-69 octane	.04⅞	.05⅛
70-72 octane (regular)	.05¼	.05⅝
60-62 400	.04½	.04⅝
64-66 375	.04⅝	.04¾

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
62 octane and below	.04⅝	.04¾
63-66 octane	.05	.05⅛
67-69 octane		.05⅝
70-72 octane (regular)	.05¼	.05½

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
62 octane and below		.04⅞
67-69 octane	no quotations	
70-72 octane (regular)		.05⅛

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04½	.04⅝
63-66 octane	.04¾	.04⅞
67-69 octane	.05	.05⅛
70-72 octane (regular)	.05¼	.05⅝
60-62 400 grades:		
62 octane and below	.04½	.04⅝
63-66 octane	.04¾	.04⅞
67-69 octane	.05	.05⅛
70-72 octane (regular)	.05¼	.05⅝
68-70 360	.05	.05¼

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor	.05	.05⅛
65 octane	.06½	.07
2	.06½	.07

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.06¼	.08
58-60 400, 65 oct. and higher	.07¼	.09

EAST COAST (domestic)—

U. S. Motor, 65 and above:		
*New York (Bayonne)	.06⅛	.08¾
Philadelphia	.06¼	.08⅝
Baltimore	.06¼	.06⅝
Charleston, S. C.	.06¾	.07

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane	.05⅞	.06
65-67 octane	.06⅛	.06¼
68-70 octane	.06⅝	.06½

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.04¼
Grade 18-55		.05¼

NORTH TEXAS—

Grade 26-70		.04¼
Grade 18-55		.05¼

CALIFORNIA—

75-85 375-390	.05½	.06¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.04⅝

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110-flash, 540-550 e.p.	.03½	.03⅝
41-43 gr., 300-320 i.b.p., 110-125 flash, 500-520 e.p.	.03⅝	.03¾
46-48 gr., 210-230 i.b.p., 480-max., e.p.	.03⅞	.04⅛

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.03⅝	.03¾
42-44	.03¾	.03⅞

NORTH TEXAS—

41-43	.03⅝	.03¾

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.03½	.03⅝

ARKANSAS (Ark. and N. La. del.)—

41-43		.03⅝

PENNSYLVANIA (inland refineries)—

45	.04¾	.05
46	.05	.05⅛
47	.05	.05¼

CHICAGO (Based on Group 3)—

41-43	.03⅝	.03¾
42-44	.03¾	.03⅞

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04⅞	.05⅝

NEW YORK (Bayonne, N. J.)—

41-43	.04⅞	.05

***GULF COAST (domestic)—**

41-43	.04½	.04¾

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03½	.03⅝
No. 1 prime white, 38-42		.03⅝
No. 1 straw, 38-40	.03¼	.03⅜
No. 2 straw, 32-36	.03¼	.03⅜
No. 2 dark, 32-36	.02¾	.02⅞
No. 3 zero to 15, 28-32	.02⅞	.03
No. 3, 15 and above, 28-32	.02⅝	.02¾

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅛	.03⅝
No. 1 straw, 38-40	.03⅛	.03¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03	.03¼

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	no quotations

CHICAGO (Based on Group 3)—

Range oil	.03¾	.03⅝
No. 1 prime white, 38-40	.03⅝	.03⅞
No. 1 straw, 38-40	.03¼	.03⅜
No. 2 straw, 32-36	.03⅛	.03¼
No. 2 dark, 32-36	.03	.03⅛
No. 3, zero to 15, 28-32	.03	.03⅛
No. 3, 15 and above, 28-32	.02⅞	.02⅞

NEW YORK (Bayonne, N. J.)—

*No. 1	.04¾	.05
*No. 2		.04⅝
*No. 4		.03¾

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.02⅝	.02⅞
No. 4, low pour point, 24-28	.95	1.00
No. 4, 15 and above, 24-28	.85	.90
No. 5, low pour point, 18-22	.70	.75
Below 14 fuel oil, industrial	.45	.50

NORTH TEXAS—

U.G.I. gas oil, under 35	.02⅝	.02⅞
No. 4, low pour point, 24-28	.95	1.00
No. 5, low pour point, 18-22	.70	.75
Below 14 fuel oil, industrial	.45	.50

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.70	.75

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02⅝	.02⅞
No. 4, low pour point, 24-28	1.00	1.10
No. 4, 15 and above, 24-28	.85	.95
No. 5, low pour point, 18-22	.70	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 10-16	.35	.45

PENNSYLVANIA (inland refineries)—

36-40	.04⅛	.04½

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.15	1.30
24 plus diesel, per bbl.	1.00	1.30
24 plus diesel (bunkers)	1.30	1.40
12-16 (bunkers at tidewater)	.70	.90
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.85
10-17 (high sulfur)	.50	.70
San Joaquin Valley:		
10-18 (tank cars)	.55	.75
24 plus diesel, per bbl.	1.00	1.25
San Francisco:		
24 plus diesel, per bbl.	1.45	1.50
24 plus diesel (bunkers)	1.55	1.60
10-16 (bunkers)	.90	.95

GULF COAST—

No. 2 fuel		.04⅛
43-47 diesel		.04
48-52 diesel		.04⅛
53-57 diesel		.04¼
58 and above diesel		.04⅜
Bunker C (bulk cargoes)	.95	1.00
Bunker C (bunkers)	.95	1.00

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.04¼
28-30 diesel (lighterage 6¼c per bbl.)		1.75
28-30 diesel (tank cars)		.04¼
Bunker C (to ocean-going ships in N. Y. Harbor)		1.15
Industrial fuel (tank cars)		.04

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

190-200 D, 15-25		.25
150-160 D, 0-10		.22
150-160 D, 15-25		.21
150-160 E, 15-25		.21
100-110 D, 0-10		.21
Steam-refined:		
600 dark green (untreated)		.07

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point	.28½	.31
15 pour point	.27½	.30
25 pour point	.25½	.28½
Steam refined:		
600	.12	.13
650	.14	.15
600 flash	.14½	.15½
630 flash	.17⅛	.18⅛

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.12
180-3		.13
180-4		.12½
200-3		.13½
200-4		.13
250-3		.14½
250-4		.14
280-3		.15½
280-4		.15
300-6½		.16
400-3½		.17
100-2½ paraffin oil		.06¾
15-25 pour point:		
200-3		.13
200-4		.12½
250-3		.14
250-4		.13½
280-3		.15
280-4		.14½

GULF COAST—

Pale oils:		
200-3	.06½	.07
300-3	.07	.07¼
500-3½	.08	.08¼
750-3½	.08	.08¼
1,200-3½	.09	.09½
2,000-4	.09½	.09¾
Red oils:		
200-5-6	.06¼	.06¾
300-5-6	.06¾	.07
500-5-6	.07¼	.08
750	.07¾	.08
1,200-5-6	.08½	.09¼

CALIFORNIA (moving to dom. market)—

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11¼
400-5-6	.09¼	.11¼
450-5-6	.09¼	.11¼
500-5-6	.09¼	.11¼
600-5-6⅛	.09¼	.11¼
700-6½ plus	.09¼	.11¼
750-6½ plus	.09¼	.11¼
900-6½ plus	.09¼	.11¼

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point	.27½	.28
10 pour point	.26½	.27
15 pour point	.25½	.26
25 pour point	.23½	.24
200 vis. at 70° F., 3 color:		
Zero pour point	.30½	.31
10 pour point	.29½	.30
15 pour point	.28½	.29
25 pour point	.26	.28

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.0450	.0475

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale		.0400
124-126 (A.m.p.) w.c. scale		.0400

NEW YORK—

Wax in bags fully refined:	
123-125 (A.m.p.) wax	.0435
125-127 (A.m.p.) wax	.0455
128-130 (A.m.p.) wax	.0460
130-132 (A.m.p.) wax	.0485
133-135 (A.m.p.) wax	.0515
135-137 (A.m.p.) wax	.0540
124-126 (A.m.p.) w.s.	.0400
124-126 (A.m.p.) y.s.	.0400
Petrolatum in barrels, carload lots:	
Dark green	.02 .02⅛
Amber	.02⅝ .02¾
Extra amber	.02⅝ .02¾
Lily white	.05¼ .05¾
Snow white	.06¼ .06¾
Cream	.04¼ .04¾

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.05	.05¼
60-62 400	.05½	.06
65 octane	.06¼	.06⅜
68 octane	.06⅝	.07
70 octane	.07	.07¼

LOS ANGELES—

U. S. Motor grades:		
55-65 octane	.04¾	.05
65-69 octane	.05¼	.05⅛
Above 69 octane	.05½	.06

KEROSENE

GULF COAST—

41-43 prime white		.05¼
41-43 water white		.05¼

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s.) in bbls.—

Cylinder stocks:		
600 S.R. unfiltered	.25	.26⅛
650 S.R. unfiltered	.25	.26
600 flash, S.R.	.24	.27⅛
630 flash, S.R.	.29	.30
Bright stock:		
8 color	.35	.42

NEUTRAL OIL

200-3 color	.35	.36
150-3 color	.33	.34

PARAFFIN WAX

NEW YORK (prices per pound)—

123-125 A.m.p.		.0425
125-127 A.m.p.		.0450
128-130 A.m.p.		.0460
133-135 A.m.p.		.0515
135-137 A.m.p.		.0540
Crude scale:		
124-126 w.s.	.0400	.0410
124-126 y.s.	.0400	.0410

Market Record of Active Oil Stocks

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1939 High	1939 Low	Week ending Oct. 7 High	Week ending Oct. 7 Low	Week ending Oct. 7 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1938	Com. sh. earn. 1938	Com. sh. earn. 1937	1938 High	1938 Low	1937 High	1937 Low
74½	50	69⅛	67¾	68	Amerada Corp.	788,675	N.P.	50cQ	10-31-39	$2.00	$2.07	$3.04	78	55	111⅞	51⅛
24¾	18⅛	24¾	23¾	24	Atlantic Refining	2,663,999	$25	25cQ	9-15-39	1.00	1.40	3.51	27¾	17¾	37	18
21½	10¼	16½	15	15⅞	Barber Asphalt Co.	390,223	$10	75c	12-16-37	....	—.85	1.91	23¾	12⅛	43⅜	10⅛
19½	11⅛	17	16¼	16½	Barnsdall Oil Co.	2,250,344	$5	25cQ	8-1-39	1.00	1.26	.85	21⅜	10⅛	35¼	10
9⅞	6½	9	8⅝	8¾	Consolidated Oil Corp.	13,751,846	N.P.	20cQ	11-15-39	.80	.55	1.48	10⅜	7	17⅞	7
31½	19⅞	29⅞	28¼	28½	Continental Oil of Delaware	4,682,581	$5	25cQ	9-28-39	‖1.00	1.10	2.98	35¾	21¼	49	24
9⅝	4½	8¼	7½	7½	Houston Oil (new)	1,098,618	$25	....	10-17-30	....	.83	.94	9¾	5	17⅝	4¾
20¼	10	17	15⅝	16	Lion Oil Refining	435,815	N.P.	25cQ	10-10-39	1.00	2.09	2.17	25⅛	15⅝	34	12½
18	11⅛	16⅞	16	16	Mid-Continent Petroleum	1,857,912	$10	25c	6-1-39	.60	.56	2.86	22⅝	12¼	35⅜	14
14⅞	8¾	12¾	12	12½	Mission Corporation	1,379,245	$10	25c	6-29-39	1.00	1.04	1.31	17¾	10⅝	34	15
15½	5⅝	12¾	11⅛	11½	National Supply	1,155,517	$10	$2 pf.‡	12-22-37	....	—.79	4.90	23	12½	41⅜	17⅝
10½	6	9⅛	8¼	8¼	Ohio Oil Co.	6,563,377	N.P.	20c	12-15-38	.20	.25	1.30	14⅞	8⅞	22⅞	8
11⅞	7⅜	9¾	9	9	Pacific Western Oil	1,000,000	N.P.	50c	12-20-38	.50	1.22	1.39	15⅞	10¼	29¾	11¾
8¾	5	6½	6½	6½	Pan American Pet. & Trans.	4,702,945	$5	$1*	12-21-37	....	.08	1.18	9¼	6¼	17⅛	7
46½	31¼	46	44	45¼	Phillips Petroleum	4,449,052	N.P.	50cQ	9-1-39	‖2.00	2.03	5.42	44⅜	27¼	64	30½
24	17⅛	22⅜	22⅜	22⅜	Plymouth Oil Co.	1,006,200	$5	35cQ	9-30-39	1.40	2.59	2.85	25⅝	15	29⅞	13
11¾	6⅛	10⅜	9½	9⅝	Pure Oil Co.	3,982,031	N.P.	25c	12-1-37	....	.38	2.15	13½	8¼	24⅜	8¾
10¼	6⅝	8⅝	8	8	Richfield Oil Corp.	4,010,000	N.P.	50c	12-21-38	.50	.51	.35	9⅞	5	6½	4⅛
24⅜	15½	22¼	20½	20½	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	9-15-39	1.00	1.52	1.97	27½	15½	54⅛	16
17¼	9⅞	14⅞	14	14½	Shell Union Oil	13,070,625	N.P.	25c	7-20-39	.70	.72	1.44	18⅜	10	34⅜	14⅞
29½	15½	24⅜	23½	23½	Skelly Oil	995,349	$15	50c	11-15-39	1.00	2.27	6.07	34⅜	18½	60⅝	26½
15⅛	10¼	14⅛	13⅝	13¾	Socony-Vacuum	31,206,071	$15	25cSA	9-15-39	.50	1.29	1.82	16⅝	10⅜	23¼	13
33⅝	24¼	30	29	29	Standard Oil of California	13,004,153	N.P.	25cQ	9-15-39	1.40	2.22	3.17	34⅞	25½	50	27½
30	22¾	28⅜	27	27⅜	Standard Oil (Indiana)	15,272,020	$25	25cQ	9-15-39	1.00	1.82	3.66	35½	24⅝	50	26½
53½	38	49½	47½	47¾	Standard Oil of New Jersey	26,618,065	$25	50c¶	6-15-39	§1.50	2.86	5.64	58⅜	39¾	76	42
66	45¾	58	56	57	Sun Oil	2,316,484	N.P.	25cQ	9-15-39	1.00	1.07	3.86	65½	45	77½	44½
3⅝	1⅜	3⅛	2⅜	2⅜	Superior Oil Corp.	1,388,979	$1	10c	12-28-38	.10	.24	.32	4¼	1⅜	7⅜	1½
50¾	32½	48	45¾	46½	Texas Corp.	10,876,882	$25	50cQ	7-1-39	2.00	2.13	5.02	49⅝	32⅝	65⅛	34⅜
5¾	3¼	4⅜	4½	4⅝	Texas Gulf Producing Co.	888,144	N.P.	10c	6-15-39	.15	.86	.68	5⅞	2⅝	9⅝	2
11⅜	7	10½	9¾	9¾	Texas Pacific Coal & Oil	888,236	$10	10c	9-1-39	.40	1.16	1.11	12½	7	16⅝	5⅜
14¼	9½	13	12⅛	12⅝	Tide Water Associated	6,375,253	$10	15c	9-1-39	1.00	1.28	2.08	15⅜	10½	21⅝	13⅛
19⅜	15⅛	17⅞	17¾	17⅞	Union Oil of California	4,666,270	$25	25c	8-10-39	1.20	1.47	2.58	22½	17⅛	28⅛	17½
24¼	20⅛	23¾	22¾	23¼	Union Tank Car Co.	1,177,381	N.P.	30cQ	9-1-39	1.30	1.16	1.70	23½	20	31½	22
3⅞	2⅜	3½	3¼	3⅜	Wilcox Oil & Gas	487,568	$5	....	5-10-28	....	.52	.24	3½	1⅝	6¼	1⅜

*Payable in 3½ per cent notes. †Includes extras. ‡One-tenth share $2 preferred stock. §Also 1½ per cent stock dividend. ‖Also right to subscribe to bonds. ¶Also 1 per cent in stock. —Deficit.

New York Curb Exchange

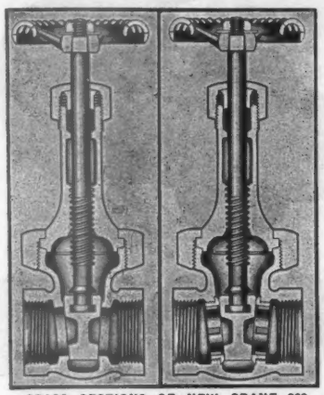
1939 High	1939 Low	Week ending Oct. 7 High	Week ending Oct. 7 Low	Week ending Oct. 7 Close	Stocks—	Total shares Outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1938	Com. sh. earn. 1938	Com. sh. earn. 1937	1938 High	1938 Low	1937 High	1937 Low
11¾	5½	8¾	8¼	8¼	American Republics Corp.	1,308,049	$10	10c	7-11-38	$0.10	—$0.22	$0.27	11¾	5	10	6⅝
7¼	2½	4¼	4	4⅛	Bridgeport Machine Co.	270,000	N.P.	$1.25	12-30-37	....	—.14	1.90	10¼	4⅞	21⅜	7
34¾	26½	28½	28½	28½	Buckeye Pipe Line Co.	200,000	$50	50c	9-15-39	2.00	2.36	4.02	39	22½	51½	36
130	110	115	115	115	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	9-25-39	6.50	5.32	6.73	128	97	112	95½
9¼	4½	6⅜	6	6	Cities Service (new)	3,704,067	$10	....	6-1-32	....	.23	1.02	11	5⅛	5⅝	1⅛
2¼	½	2	1¾	1⅞	Cosden Petroleum	462,551	$1	....	....	....	....	.19	2⅜	⅞	5½	1½
28	16¾	26⅜	25½	26	Creole Petroleum	6,975,383	$5	50cSA†	6-15-39	1.00	1.64	1.61	27½	17½	38⅜	20¼
7⅛	3⅝	5¼	5	5	Darby Petroleum	351,390	$5	25cSA	1-15-39	.50	....	1.36	10¾	5½	18⅝	6½
2⅝	1½	2⅛	2⅛	2⅛	Derby Oil & Refining	263,162	N.P.	....	....	....	—.91	1.34	3½	1½	8⅜	2¼
20	15⅛	18	18	18	Eureka Pipe Line	50,000	$50	50c	8-1-39	3.00	—.37	—.12	31	16	47½	24½
45	29¼	43½	41⅝	42	Gulf Oil Corp.	9,076,202	$25	25cQ	10-1-39	1.00	1.43	3.51	46⅞	33	63½	33
71	52½	69	66¾	68	Humble Oil & Refining	8,987,840	N.P.	62½c	10-2-39	3.00	3.98	5.22	72⅝	56	87	54⅞
17	11⅜	13	11¾	12⅞	Imperial Oil of Canada	26,965,078	N.P.	62½cSA†‡	6-1-39	1.25	.96	.98	19½	14⅛	24¼	14½
7	5⅝	6½	6½	6½	Indiana Pipe Line	300,000	$10	30c	5-15-39	.50	.47	1.03	9⅜	6	15	5⅞
27½	17½	20¼	17⅝	19¾	International Petroleum	14,324,088	N.P.	1.00†‡	6-1-39	2.50	1.98	....	31¼	21	39½	23½
3¾	2⅛	2½	2⅜	2⅜	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	.10	.14	.17	5	2⅛	8¾	2⅝
9½	7⅛	8⅞	8½	8½	Lone Star Gas	5,553,747	N.P.	20c	8-21-39	.60	.88	1.14	10⅜	6⅝	14¼	5¼
7¾	4	6⅝	6¼	6¼	Louisiana Land & Exp.	2,977,449	$1	10cQ	9-15-39	.45	.45	.58	9⅜	6½	15¼	6¾
17	14½	..	..	..	Margay Oil Corp.	149,943	N.P.	25cQ	7-10-39	1.00	2.28	3.26	24	16	33½	17
8¾	6⅝	7⅝	7⅜	7⅜	Midwest Oil Co.	998,474	$10	45c	6-15-39	1.00	.93	1.14	9¾	6⅝	14⅝	6¼
5⅞	4⅜	5½	5⅜	5⅜	Mountain Producers	1,593,584	$10	30cSA	6-15-39	.60	.62	.76	5¾	4½	7⅞	4⅛
14	11¼	14	13	13⅜	National Fuel Gas	3,810,183	N.P.	25cQ	10-16-39	1.00	.84	.96	14⅝	11½	19½	12
8⅝	7¼	8½	8¼	8¼	National Transit	509,000	$12.50	35c	6-15-39	.75	.88	1.19	9¾	6½	12½	7¼
1⅜	1½	1½	1½	1½	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	2⅝	1½	5	1⅛
4⅞	4	..	..	..	New York Transit	100,000	$5	25c	10-14-39	.25	.16	.49	4½	3½	5⅜	3⅜
6	4¼	..	..	..	Northern Pipe Line	120,000	$10	15c	6-1-39	.35	.24	.78	6	4	12¾	5¾
7⅝	4	5⅝	5¼	5½	Pantepec Oil	2,857,000	$1	....	....	....	....	....	7¾	3½	9⅝	2⅜
3⅛	⅛	3⅛	2⅜	3	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.17	—.17	4½	1⅝	12⅜	2
3	1⅞	2¼	2	2	Ryan Consolidated	298,931	N.P.	....	....	....	.29	.46	4	2⅛	6½	2¼
4¼	3½	4¼	4¼	4¼	Southern Pipe Line	100,000	$10	15cSA	9-1-39	.30	—.27	.85	5⅜	3¼	7¼	3⅞
39½	26¾	39½	38	38½	South Penn Oil	1,000,000	$25	37½cQ	9-29-39	1.75	1.44	4.64	39	28¾	56	35
19¾	18	..	..	..	Southwest Penna. Pipe Lines	35,000	$50	50cQ	10-2-39	2.00	—.41	.95	22¼	16½	42	20
18⅞	17¼	18⅝	18¼	18¼	Standard Oil of Kentucky	2,604,790	$10	25c	9-15-39	1.25	1.45	1.60	18⅝	15	21⅛	14⅝
26¾	17	26	25¼	25¼	Standard Oil of Ohio	753,740	$25	25c	9-15-39	1.00	1.81	3.67	22⅜	16¼	45	16
2¾	1¾	2¼	2¼	2¼	Sunray Oil	2,007,076	$1	5c	4-27-39	.05	.23	.42	3¼	2	4⅞	2
4	2⅝	3¼	3⅛	3⅛	Texon Oil & Land	936,024	$2	10c	6-30-39	.60	.56	.51	5¼	3½	7⅝	2
6	2½	4½	4	4	Transwestern Oil Co.	750,000	$10	....	....	....	—.12	.48	7⅝	4¼	13⅞	4⅝
3⅜	1⅝	2¾	2⅛	2¾	United Gas Corp.	7,818,959	$1	....	....	....	—.51	.25	5¼	2⅝	13⅞	3

†Includes extras. ‡Payable in Canadian funds. —Deficit.

New or Improved Equipment

Line of Crane Valves Designed for Steam, Water, Oil, or Gas

Crane Co., 836 South Michigan Avenue, Chicago, announces a new line of 200-lb. brass gate valves, made with wedge disk, union bonnet and rising stem. They



CROSS SECTIONS OF NEW CRANE 200 POUND BRASS GATE VALVES
LEFT—No. 422 with seats cast integral with body.
RIGHT—No. 423 with renewable body seat rings.

are identified as No. 422 and No. 423 and are identical except for the body, No. 422 having seats cast integrally with the body and No. 423 having renewable body seat rings.

The valves are recommended by Crane Co. for steam, water, oil or gas lines. No. 423 is regarded as particularly useful where severe operating conditions are best met with a renewable seat valve. The disks in both valves and the body seat rings in the No. 423 are made of Crane nickel alloy. These valves are available in ¼, ⅜, ½, ¾, 1, 1¼, 1½, 2, 2½, and 3-in. sizes.

Atlas Opens Two New Stores

Atlas Supply Co. has opened two new supply stores, one in Artesia, N. M., the other in Grayville, Ill. H. F. Oliver, manager in Kermit, Tex., for several years, is in charge in Artesia, where the company carries both cable-tool and rotary supplies as well as pumping units. The Grayville store is under the management of E. L. Chavellier, who managed the Overton, Tex., store for several years. The Grayville store carries a complete line of rotary supplies and pumping equipment.

H. B. Cookston Joins Regan

H. B. Cookston has joined Regan Forge & Engineering Co., Houston, Tex., as sales representative in its Mid-Continent division. Mr. Cookston has been active in Mid-Continent and eastern oil areas for the past 25 years. He formerly was affiliated with W-K-M. Co., of Houston, and has a wide circle of friends in the oil industry.

Layouts, Angle Cuts on Pipe of Any Size Marked Accurately

California oil companies and pipe-line contractors have made important savings in shop and field time on welded pipe-line installations, through use of the Trumark protractor, recently introduced by Advance Sales Co., 1003 East Slauson, Los Angeles, Calif. This marking device makes possible immediate and accurate markings of layouts and angle cuts on any size of pipe, without the use of templates, wraparounds, or engineering computation. It can be used by anyone, in the field or the shop, without previous experience or layout training, to obtain accurate cut marks, according to the manufacturer.

The protractor is placed on the pipe or any rectangular shape and is held in level position by a strong spring chain. The level is determined by a bubble indicator. Any desired angle for the cut is set on the 180° scale. The marking arm may then be moved completely around the pipe. The marking is done by a chalk that will not blow off and is easy to follow. The protractor is rigid in marking position and scribes a true line. Construction is of cast aluminum alloy. Four models handle pipe up to 3, 6, 12 and 36 in. respectively.

Merla Offers Gas-Lift Pamphlet

Merla Tool Corp., of Dallas, Tex., is distributing a pamphlet covering its automatic gas-lift intermitter system and including illustrations. The treatise includes explanation of how the system operates, how it is installed, what equipment is needed, and case histories of successful operating practice. The Merla system makes use of an automatic bottom-hole intermitter that opens when the fluid level in the production string reaches a predetermined height. A packer and a standing valve are used to prevent the high-pressure gas from acting against the face of the producing formation. Since the automatic intermitter shuts off the gas after each "load" of fluid has been discharged from the well, the gas-oil ratio is held at the minimum.

Dresser Repair Clamp Quickly Stops Leak in Couplings

For quickly stopping leaks through the threads of screw collars (screw couplings), Dresser Manufacturing Co., Bradford, Pa., is offering its Style 41 repair clamp

in sizes from 4½ to 12 in. A smaller clamp of the same design, but with malleable followers instead of steel and known as Style 4, comes in sizes ¾ in. to 4 in.

The collar-clamp consists of a few simple factory-made parts (followers, gaskets, bolts), which, according to the makers, are quickly assembled with only one tool, a wrench. Advantages claimed are simplicity, speed, efficiency, and permanent tightness.

The makers state that unskilled labor can easily apply the clamp without interruption of the service, under all normal pressures, and that the clamp can be furnished for any collar, old or new.

Woodill Announces New Company

Formation of Pyramid Equipment & Sales Co. is announced by Gilbert Woodill, to manufacture and sell carburetors and fuel regulators for the use of natural gas in power units and stationary engines. These same carburetors and a combination vaporizer and fuel regulator for the use of liquefied petroleum gas (butane-propane) are to be available for such engines, as well as tractors, trucks, buses, rail cars and portable oil-well drilling and servicing units. The carburetors will be available in both straight gas and combination gas-and-gasoline types in S.A.E. sizes up to 2-in. Mr. Woodill is president and general manager and Karl Westlund is vice president and chief engineer of the company. Both formerly were associated with Ensign Carburetor Co. The company will act as manufacturer's agent for kindred devices and equipment. Its headquarters are 2305 East Eighth Street, Los Angeles, Calif.

Pumpers Designed for Medium Service Offered by National

National Supply Co. has added two new unit pumpers to its line, Types TU234-JD23TB and TU234G-JD23TP. They are designed for medium pumping service and

are identical in design and capacity except for the cranks, counterweights, and pitman assembly. Maximum polished-rod stroke is 42 in. in each case and safe load of walking beam is 9,125 lb. A.P.I. The A.P.I. peak torque ratings is 57,200 lb. at 20 s.p.m. and overall gear ratio is 29.8.

The Type TU234-JD23TB pumper has a fully equalized pitman assembly and is equipped with S.K.F. spherical roller-bearing wrist-pin housings. National eccentric disk cranks and counterweights give infinitely and continuously variable adjustability both in counterweight effect and degree of lag and lead. The counterweights are of the disc one-piece type, and are clamped in the desired positions on the circular rim of the crank. No lifting is required and the weights cannot slide off the cranks.

Type TU234G-JD23TP is especially designed for installations where economy in first cost is of foremost consideration. Plain cranks with bronze-bushed wrist-pin housings are used, and the pitman assembly is of the unitary instead of the equalized type. Beam counterweights installed in any increments from one to eight allow a wide range of counterweighting.

Aside from the individual features described, the design of the two units is the same. Unusual resistance to vibration is provided by a strong-braced samson post of the four-legged type, welded integrally with the frame. A steel ladder with a ring-type back rest allows safety and convenience for work at the beam level. The walking-beam saddle and the beam pitman operate on roller bearings. Wide-faced single helical gears, favorably proportioned and heat-treated for long wear, are carried on well-supported heat-treated steel shafts of ample size in Timken roller bearings. A description of these two is given in Bulletin 251.

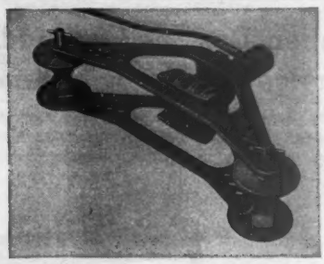
Pranger Turns to Field Research

Guiberson Corp., Dallas, Tex., has announced that Albert Pranger, who has served as chief engineer for 4 years, will engage in special research for the company to discover from actual field investigation opportunities for improving equipment manufactured by Guiberson and to devise and develop new oil-field tools.

The business of Guiberson Corp., since it was founded in 1910, has been essentially that of developing, introducing, and perfecting improved oil-field equipment. Mr. Pranger will organize more definitely the work of invention and development, making it a continuous program. Mr. Pranger's headquarters will be at Guiberson's main offices in Dallas.

New Porto-Power Pipe Bender Can Handle Seven Pipe Sizes

A new Porto-Power pipe bender is announced by Blackhawk Manufacturing Co., Milwaukee, Wis. Using a 20-ton hydraulic unit, the bander handles seven sizes



of rigid conduit and pipe, including 1¼, 1½, 2, 2½, 3, 3½, and 4-in. diameters. This 190-lb. unit, Model S-36, has a simplified one-piece bending ram which eliminates 13 various extension bars, tension arms, studs, etc., used in the original 1 to 2-in. Porto-Power

bender introduced last year. The manufacturer claims time-saving advantages for the new "pull pin" method of fastening the rotating pivot shoes, a principle which makes wrenches unnecessary in assembly.

The 20-ton Porto-Power hydraulic unit is quickly removed from the bending frame and used with special attachments for pulling gears and pulleys or for lifting over long spans at any angle.

Another new Blackhawk development is the S-30A pipe bender, which uses a 10-ton Porto-Power hydraulic unit. This model is similar in principle to the S-36 but handles a popular pipe range of 1, 1¼, 1½, and 2-in. diameters.

Both the S-36 and S-30A are packed in portable kits for carrying directly to the pipe-bending job.

The upper picture of the new 4-in. Porto-Power pipe bender shows the one-piece bending frame coupled with the 20-ton, remotely controlled, all-directional ram. The lower picture shows how portability is a feature of the new pipe bender. Pivot shoes on the Model S-36 have wide rims which act as wheels for rolling the unit along smooth surfaces. The ram is connected to the hand-operated pump by a 6-ft. high-pressure hose.

Here and There With Men Who Manufacture Equipment

Rector Well Equipment Co., Fort Worth, Tex., has appointed Lucey Export Corp., 3505 Woolworth Building, New York, its export representative.

A. A. Fomilyant, formerly in charge of field editorial work for Western Business Papers, Inc., has joined Merco Nordstrom Valve Co. and Pittsburgh Equitable Meter Co. in sales engineering work.

Nowery J. Smith Supply Co., Houston, Tex., has been made exclusive distributor for Grant Oil Tool Co., Los Angeles, Calif., manufacturer of reamers, underreamers, wall scrapers, hydrostatic bailers, hydrostatic cleaners, and liner pullers.

R. B. Moir, who resigned recently as chief engineer of W. A. Jones Foundry & Machine Co., has joined Foote Brothers Gear & Machine Corp. as director of sales research and engineering development.

W. L. Walker, president of W. L. Walker Co., Tulsa, has returned to his office from an extended business trip to the oil fields of Illinois, Indiana, Michigan, New York, and Pennsylvania.

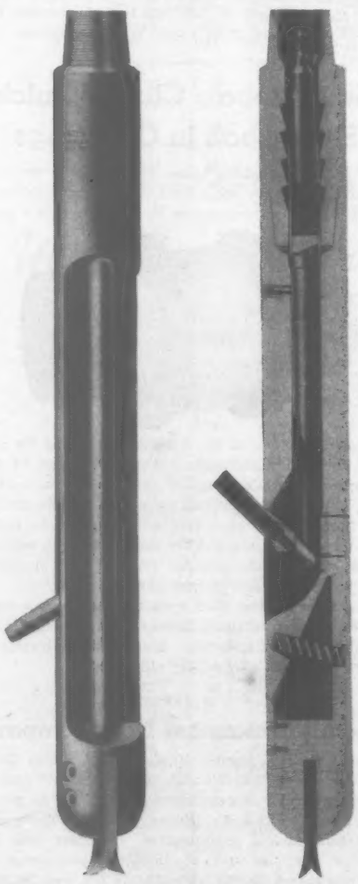
Western Sand-Banum Co., M. & M. Building, Houston, Tex., has added B. C. Simpson to its Houston and Gulf Coast sales force. Service Machine & Iron Works, of New Orleans, La., has been appointed distributor in that territory.

R. B. Nichols has been elected secretary of Bantam Bearings Corp., South Bend, Ind., subsidiary of Torrington Co., Torrington, Conn. He will continue as sales manager, a position he has held the past 3 years.

Homco Announces New Way of Taking Side-Wall Samples

Homco cutting and fishing-tool service, a division of Houston Oil Field Materials Co., Houston, Tex., announces a new method of taking and recovering side-wall samples which, the manufacturer claims, will cut the time required to complete a well to the desired depth by eliminating unnecessary coring. Any number of samples may be taken without interrupting normal drilling procedure, and the tool is designed to recover samples sufficiently large to furnish a complete analysis of the formation sampled. Cores 1¼ in. in diameter and 4 to 6 in. in length may be obtained in drilled holes of 8½ to 12¼-in. diameter, while 1⅛-in. cores, 4 to 6 in. in length, may be obtained in drilled holes 7⅞ to 8½ in. in diameter, the length of samples depending on the length of core tube used.

This tool, illustrated here in outside and inside views, is run on the drill pipe, and the sample is cut and recovered through the drill pipe in connection with a



wire-line retractable core barrel. Rotation and circulation of drilling fluid is permitted at all times, except when actuating the drill stem to obtain samples, by the use of a special circulation head with safety wire-line stuffing box provided for use with the sampler.

All tools, subs, circulating head, overshot assembly, etc., necessary to the operation of the sampler, with the exception of the wire line and wire-line reel, are furnished to the user. These tools are available on a service basis in the United States and are for sale in foreign fields.

H. & B. Sales Co. Rotary Hose Has Flexiblity and Strength

An all-steel rotary hose designed to meet every requirement for flexibility, strength, and service at all depths and under all pressures has been announced by

H. & B. Sales Co., Long Beach, Calif. This hose, the Tri-Plane Champion, incorporates seven high-pressure Champion swing joints and swivels connected by six lengths of seamless-steel tubing and rotating on lubricated roller bearings. The Champion will swivel in any direction from any position in the rig, regardless of pressure, since it has full 360° action in three different planes. It is lighter in weight than similar types, yet is said to be strong enough to work freely under 5,000 lb. pressure without binding, springing or vibrating. It is fluid-tight, packed off at each joint by composition cups that expand under pressure to form a seal. Thus, the higher the pressure, the tighter this seal becomes.

An outstanding feature is the tapered roller-bearing construction of each swivel. These bearings are precision-made and fitted to give a smooth, even bearing surface to insure easy turning at all times, provide greater lubricating area and absorb the pressure thrust over a larger surface, thus reducing wear. All joints are arranged to provide a straight fluid course. No sand or fluid can reach the bearings, and there are no abrupt shoulders to obstruct fluid passage or cut the hose.

Crane Offers Gasket Marker

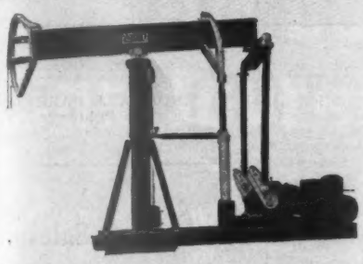
Crane Packing Co., 1800 Cuyler Avenue, Chicago, has introduced a handy device for marking and outlining gaskets for pipe flanges. This new marker is made of celluloid, and instructions for its use are on the marker itself. It eliminates the need of dividers, gasket tables, and the taking of measurements. The device is simply pinned to the gasket material by means of a thumb tack through its center hole. Then a pencil point is placed in the hole representing the inside diameter of the pipe and a circle is described. Similarly, the outside diameter is outlined by placing the pencil point in the proper hole. The device is designed for marking gaskets for extra-heavy, medium-standard, and low-pressure flanges of both ring and full-face types.

Murray Is Made Sales Manager

L. D. (Jiggs) Murray, American Iron & Machine Works Co., of Oklahoma City, Okla., and Houston, Tex., has been made sales manager in Louisiana and Arkansas, with headquarters in Houston. Mr. Murray, before going to American 2 years ago, was in the sales department of Bovaird Supply Co.

Oil Center Tool Co. Develops Air-Balanced Pumping Unit

Oil Center Tool Co., Houston, Tex., has developed a new principle in air-balanced pumping units. The new O-C-T pumper utilizes compressed air on both the up-



ward and downward strokes. The compressor is housed in a vertical chamber between the gear box and samson post, the compressor mechanism being actuated by the movement of the walking beam. The cylindrical samson post serves as a reservoir for the compressed air. On the upstroke of the sucker rods, air pressure is automatically applied to the top side of a piston in the compressor chamber to assist the prime mover in lifting the load. This pressure on the top side of the piston serves the same purpose as the conventional counterbalance weights on the extremity of the walking beam. On the downstroke of the sucker rods the same air pressure above the piston serves as an effective cushion, positively preventing a sudden, undesirable drop of the load.

Trade Literature

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis.—Booklet, "Keying Production to Profits With the New Vari-Pitch Speed Changer!" and current issue of Allis-Chalmers Electrical Review.

RUBBER CHEMICALS DIVISION OF E. I. DU PONT DE NEMOURS & CO., INC., Wilmington, Del.—Current issue of Neoprene Notebook.

ELECTRIC CONTROLLER & MANUFACTURING CO., Cleveland, Ohio.—Booklet 88, "EC&M Custom-Built Automatic Motor Control."

COPPERWELD STEEL CO., Glassport, Pa.—Eight-page booklet, in color, describing process of molten-welding copper to steel in the manufacture of Copperweld.

INTERNATIONAL HARVESTER ORGANIZATION, 180 North Michigan Avenue, Chicago.—September issue of International Power.

U. S. ELECTRICAL MOTORS, INC., Los Angeles, Calif.—Bulletin on U. S. Lubriflush system of motor lubrication.

LINCOLN ELECTRIC CO., 12818 Coit Road, Cleveland, Ohio.—Bulletin, "101 Welding Ideas for Low-Cost Maintenance."

W. A. JONES FOUNDRY & MACHINE CO., 4401 Roosevelt Road, Chicago.—Bulletin on worm-helical speed reducers.

ROCKWOOD MANUFACTURING CO., Indianapolis, Ind.—Bulletin on Rockwood pivoted motor drives.

FISCHER SCIENTIFIC CO., 711 Forbes Street, Pittsburgh, Pa.—Current issue of The Laboratory.

SECURITY ENGINEERING CO., INC., Whittier, Calif.—Current issue of Security Bulletin.

MINNEAPOLIS-HONEYWELL REGULATOR CO., Minneapolis, Minn.—Bulletin on new-type electric static-pressure regulator, with directions for installation.

STONEHOUSE SIGNS, INC., Denver, Colo.—Bulletin on accident-prevention, danger, caution, and other signs.

BAKER OIL TOOLS, INC., Huntington Park, Calif.—Current issue of Cement Retainer News Service.

WESTCOTT & GREIS, INC., Tulsa.—Loose-leaf catalog containing description of measurement and control equipment for the oil and gas industry, made by companies for which it is representative. These companies include American Meter Co., Inc.; Bristol Co.; Buffalo Meter Co.; Chaplin-Fulton Manufacturing Co.; Crosby Steam Gage & Valve Co.; Davis Regulator Co.; S. R. Dresser Manufacturing Co.; Meriam Co.; Reliance Regulator Corp.; Robinson Orifice Fitting Co.; Smith Meter Co.

INTERNATIONAL NICKEL CO., 67 Wall Street, New York.—Engineering bulletin on resistance of nickel and its alloys to corrosion by caustic alkalies.

PEERLESS PUMP DIVISION, FOOD MACHINERY CORP., 301 West Avenue 26, Los Angeles, Calif.—Catalog 127A, Peerless oil or water-lubricated pumps.

BLAW-KNOX CO., Pittsburgh, Pa.—Catalog 1685, process autoclaves.

AMERICAN MANGANESE STEEL DIVISION OF THE AMERICAN BRAKE SHOE & FOUNDRY CO., Chicago Heights, Ill.—Bulletin on Dieweld, a new Amsco welding rod.

"Finger Valve" Construction Is Feature of New Compressor

A new line of industrial compressors and vacuum pumps in sizes from three-fourths through 5 hp. is announced by Ingersoll-Rand Co., 11 Broadway, New

York. These new compressors, embodying a simplified "finger valve" construction, form only one part of the complete range of Type 30 compressors, which are built in sizes up to 15 hp. for pressures as high as 1,000 lb. They are available with or without drive, receiver-mounted or bare.

Announcement is made also of new paint-spray compressor units which utilize the "finger valve" construction.

Bailey Redesigns and Improves Its Complete Line of Meters

Bailey Meter Co., Cleveland, Ohio, has restyled its complete lines of meters for power plants and industrial processes. Sturdy construction features and other proven advantages used in the former meter casings were adopted for the new meters. This resulted in a meter basically the same in appearance as those meters now in service, thus maintaining uniformity where redesigned meters are added to existing installations.

Durability has been increased by a steel ring welded to the meter casing which also serves as a support for a new piano-type hinged door. The door closes upon a synthetic-sponge gasket designed to give complete contact against the inner surface of the door, thereby sealing the sensitive meter parts from moisture and dust. A narrow trap at the top of the meter casing prevents dust from falling into the meter when the door is opened.

Only the information necessary for reading of the chart record is now in sight. It is shown through the glass window of the meter.

NOMADS DISCUSS PLANS FOR ENTERTAINING VISITORS AT OIL EXPOSITION

Plans for the entertainment of foreign oil men at the International Petroleum Exposition next May were discussed at the monthly meeting of the California chapter of Nomads Wednesday evening, October 4, in the Biltmore Hotel in Los Angeles. Talks dealt with the European war. E. L. Decker, president of the chapter, presided. W. F. Bettis was secretary.

At the business session preceding the dinner charter members of the chapter received membership certificates and news of the activities of the Houston, Tex., and Tulsa chapters was read. About 45 Nomads and their guests were present.

R. J. Eiche, foreign sales representative, told of leaving for England on the Queen Mary, August 7, and of his experiences in London during the prewar tension, with interesting sidelights on his return on the Empress of Australia at the time of outbreak of the war.

John Eastman, of the Eastman Oil Well Survey Co., told of the sentiment of German, Rumanian, and other European peoples toward war, and observations on his past trips through the Continent. An address on foreign trade problems was given by G. A. Glasscock, trade counselor of the Los Angeles Chamber of Commerce.

Among foreign oil guests were A. F. Driskill, of Iraq Petroleum Co., Kirkuk, Iraq; C. R. Ricks, supervisor for Caribbean Petroleum Co., Maracaibo, Venezuela, and Archie Brown, drilling superintendent for the same company.

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LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

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A complete SERVICE EXPERTS in every department of the Oil Business at your SERVICE a REAL SET-UP. The best opportunity ever offered you. Leases in large or small lots at

WHOLESALE PRICES

Write today and get started right.

OIL BROKERS EXCHANGE

200 Don Juan Bldg., Santa Fe, N. M.

SACRIFICE 40-acre Oil Lease, Chaves County, for only $10.00, full price. Guarantee title. P. O. Box 191, Clovis, N. Mex.

MISSOURI Leases in blocks and scattered acreage. HARRAH and FRITH, Chillicothe, Missouri.

60% INTEREST 7000 ac. Colorado Free for 2500 ft. well to test Pennsylvanian through Ordovician. Structure, source beds, and Sands approved by first class geologist. W. P. THOMSEN, 412 W. 6th St., Los Angeles, California.

WILL they find oil in the Forest City Basin? Get the facts about 26 wells drilled this year. Particulars. Box 423, St. Joseph, Missouri.

1600 ACRES for drilling contract. Geologized and recommended. Randolph County, Illinois. Box 5, Sparta, Illinois.

CALIFORNIA Oil Land Surveys and Subdivisions. L. H. Gowdy, Licensed Surveyor and Civil Engineer. San Marino, Calif.

OIL LEASES, producing oil royalty, drilling blocks, and bargains in Texas ranch lands. Address—Licensed Trustee, Box 1203, Abilene, Texas.

7,000 ACRE Solid Block Concho County, Texas. Free for test well. Ask me, Frank Smith, 305 Santa Fe Building, Dallas, Texas.

1700 ACRES with 11 oil wells, must raise cash. Small oil deals solicited. Arthur Nickell, Fayette, Missouri.

GOOD BLOCK proven oil or gas leases wanted. Immediate drilling. Describe fully or no attention paid. Principals only. Box 93, Tulsa, Oklahoma.

WANT CAPITAL to invest in perpetual mineral rights in North Permian Basin in Texas and New Mexico in major company blocks on geophysical highs. Rapid development under way now. Will take interest after all monies have been repaid. Address Box J-990, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE Oil and gas leases and small production located in Kentucky shallow field, and leases located in Clay County, Tenn. Have for sale two tracts of proven Fluorspar and Zinc deposits; reports furnished on request. W. P. Harley, Bowling Green, Kentucky.

WILL ASSIGN ⅝ interest in proven shallow oil and gas field for financial assistance to drill. Address Box K-305, The Oil and Gas Journal, Tulsa, Okla.

PARTY thoroughly familiar with legal requirements, geological conditions and developing and operating practices in Eastern Oklahoma Shallow Oil and Gas Fields, desires reliable connection to handle financing number of exceptionally favorable structures and leases in that area, at small cost. References gladly exchanged and fullest investigation solicited. J. L. Haner, 105 McKibban Building, Muskogee, Oklahoma.

Leases and Drilling Blocks

NEW MEXICO WEEKLY OIL SCOUT REPORT.—Send for sample copy. Roy G. Barton, Box 968, Hobbs, N. M.

EAST TEXAS Woodbine—Trinity sand wildcats starting shortly offer best chances big quick money, Leases—Royalties. E. CROFT, PROCTOR, TEXAS.

WILL SELL 1/16th interest in proven shallow gas lease for $55. to finance first well. Write for full details. Drilling Contractor, Box 262, Claremore, Oklahoma.

NEW MEXICO
State Oil and Gas Leases

Buy on known structures where major companies own leases. 50c per acre. 5c rentals. Other leases as low as $6.00 per forty. Write for lists. Twenty years in the business without a complaint.

HARRY S. WRIGHT, STATE LESSEE
Registered Dealer—State of Iowa.
Box 166, Council Bluffs, Iowa
Box 347, Santa Fe, New Mexico.

THE OSBORN OIL GROUP, is starting a drilling campaign on proven leases in Illinois, Indiana and Ky. Headed by experienced oil men. Later expect to do some drilling on Gulf Coast, in gusher districts. We sell royalties under wells drilling. This is a deal to get in on. Subscribe to this oil group today. Bank Reference. Box 2152, Wichita, Kansas.

Legal Blanks

SINCE 1908 Burkhart's legal forms—servicing Mid-Cont. oil fields, including Ill., La., Mo., Ind. & Ky. Free catalog & samples. Burkhart Ptg. & Sta. Co., 115 So. Cinn., Tulsa, Oklahoma.

Wanted

WILL INVEST $5,000 in good oil or gas deal. Describe fully or no attention given. Principals only. Suite 421, 507 South Main, Tulsa, Oklahoma.

Help Wanted

WANT YOUNG PETROLEUM ENGINEERS to install Gas-Lift. Must reside in territory they work. Address P. O. Box 2782, Houston, Texas.

MACHINIST: Experienced with pipe machine, lathe, acetylene and electric welding and oil industry equipment. Steady work for steady worker. Box K-301, The Oil and Gas Journal, Tulsa, Oklahoma.

ESTABLISHED steel derrick manufacturer will appoint local, resident representatives for exclusive territories. Mid-Continent area. Straight commission, but a generous contract. Address Box K-304, The Oil and Gas Journal, Tulsa, Okla.

Situations Wanted

Oil and Gasoline Distributing Companies! Corporate real estate, taxation, chain leasing man; specialist property tax assessment reduction; appraisal; successful tax saving record in present position greatly exceeding salary remuneration. Address Box K-262, The Oil and Gas Journal, Tulsa, Oklahoma.

EXECUTIVE or ASSISTANT

Oil well supply, steel fabricating, and oil experience. Broad, practical knowledge of financial, sales, production, legal and administration problems. P. O. Box 134, South Pasadena, California.

MANUFACTURERS REPRESENTATIVE An experienced and well acquainted salesman desires additional lines to sell, in Mid-Continent Area. Commission or Salary. Box K-291, The Oil and Gas Journal, Tulsa, Oklahoma.

REFINERY ENGINEER—12 years' experience in oil refinery drafting, estimating, cost control and field work. Last 8 years with one major company holding responsible position. College graduate. Address Box K-310, The Oil and Gas Journal, Tulsa, Oklahoma.

OIL SPECIALIST tax consultant. Age 37. C.P.A. 14 yrs. experience, which includes systematizing, financial reports, and diversified public accounting. Highest credentials as to integrity and creative ability. Address Box K-130, The Oil and Gas Journal, Tulsa, Oklahoma.

PETROLEUM ENGINEER—Young man, production and drilling experience on Gulf Coast. P.P.E. degree from the University of Texas. Desires position anywhere that will involve land department work along with drilling and production. Address Box K-311, The Oil and Gas Journal, Tulsa, Oklahoma.

Survey Service

REMEMBER EAST TEXAS

When all other methods fail, employ my divining or dowsing method. If oil exists this methods finds it. Faults, broken, treacherous areas accurately defined. Our Watson #2, first producer Wilmington, Calif. field, located by this method. More reliable than mechanical geophysics. Ask any unbiased oil authority. Many years' experience. A wise man investigates. George Miller, 1548 Post, Torrance, Calif.

Incorporations

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CHARTERS—Delaware best, quickest, cheapest, more liberal. Free forms. Colonial Charter Co., Wilmington, Del.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

Brokers—Salesmen

Sell in the most active area in the United States—The Permian Basin of West Texas and Southeastern New Mexico. From the standpoint of royalty investors this area has much to offer. Can supply you with choice non-producing royalties located on geophysical highs. Also drilling blocks, close in acreage to production, or wildcat leases. I maintain my own field men who cover this area for me. All offerings meet the requirements of the Security and Exchange Commission. Inquiries invited.

B. D. BUCKLEY

Paul Brown Bldg., St. Louis, Mo.

PRODUCING OIL ROYALTIES
15 years of experience.
L. H. WITWER
703 Kennedy Bldg., Tulsa, Okla.

PRODUCING royalty investments wanted. Sebago Oil Co., 719 McBirney Bldg., Tulsa, Oklahoma.

Business Opportunities

PIONEER OIL AND GAS ENGINE builders will consider selling its name, patterns, machinery and equipment, part or all, and inventory at low figure to manufacturer who will continue repair service to customers including U. S. Government. Address Box 290, The Oil and Gas Journal, Tulsa, Oklahoma.

ESTABLISHED Sales and service supply company desires agency for high class gas engine and diesel engine rings—Also desires account of high class flexible couplings for connecting engines, motors, etc. to driven machines. Sell entire Mid-Continent district. Address Box K-302, The Oil and Gas Journal, Tulsa, Oklahoma.

For Sale—Maps

TEXAS and NEW MEXICO
UP-TO-DATE OIL DEVELOPMENT MAPS
Zingery Oil Map Co., Fort Worth, Tex.

R. B. ROBINSON MAPS
Jackson, Miss. 312 Century Bldg.
Ownership maps of Yazoo and forty other Mississippi counties.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Equipment Wanted

WILL buy unitized Diesel Rig, including derrick, drill pipe, casing, wire rope, etc., new or nearly so. For small-hole drilling to 7,000 feet, foreign. Send price per unit, total price, and price f.o.b., state which U. S. port. Send specifications and if will sell all or part. Address
BOX K-251
The Oil and Gas Journal
Tulsa, Oklahoma.

WANTED one or two Newton Heat Exchangers. Also small stabilizer. P. O. Box 449, Livingston, Texas.

WANTED
Air Compressors
Ingersoll-Rand Belt Driven
10 & 4¼ x 10 XOB
11 & 5 x 10 XOB
Box K-300, The Oil and Gas Journal
Tulsa, Oklahoma.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30
4 Lines	1.40	2.40	3.40	4.40
5 Lines	1.75	3.00	4.25	5.50
6 Lines	2.10	3.60	5.10	6.60
7 Lines	$2.45	$4.20	$5.95	$7.70
8 Lines	2.80	4.80	6.80	8.80
9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL

Tulsa, Oklahoma